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ALBUCASIS
On Surgery and Instruments

BY
M. S. SPINK AND G. L. LEWIS

ALBUCASIS

On Surgery and Instruments

A DEFINITIVE EDITION OF
THE ARABIC TEXT
WITH ENGLISH TRANSLATION
AND COMMENTARY

BY
M. S. SPINK AND G. L. LEWIS

LONDON
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INTRODUCTION¹

'ALBUCASIS' is probably the commonest of the many forms² into which medieval Europe distorted the name of the Arab surgeon Abū 'l-Qāsim Khalaf ibn 'Abbās al-Zahrāwī. Surprisingly little is positively known about him. The last element of his name indicates his birthplace as al-Zahrā', the royal city five miles west of Cordova, founded A.D. 936 by the Caliph 'Abd al-Raḥmān III al-Nāṣir (r. 912-61), the eighth Umayyad ruler of Spain, and from this we derive a *terminus post quem* for the date of his birth.

His patronymic tells us that his father's name was 'Abbās. The additional name al-Anṣārī given to him in the manuscripts of the seventeenth treatise of his work³ shows that his family claimed to have originated in Medina.

There is no contemporary evidence for the later stories that make him personal physician to 'Abd al-Raḥmān III, or his son and successor al-Ḥakam II al-Mustanṣir (r. 961-76), or the Chamberlain Ibn Abī 'Āmir al-Manṣūr (d. 1002). We might suppose that he himself refrained from mentioning any such appointment out of modesty, but it is unlikely that all the copyists of his manuscript would have followed his example. On the level of hearsay, it is worth recording what the scribe of the Veliūddin MS. says about him (fol. 228b): 'I have been told that al-Zahrāwī—God's mercy on him—was extremely ascetic; that half of his work every day he did without fee, as charity; and that he wrote this compendium for his sons over a period of forty years.' We can be fairly sure that the 'sons' for whom Albucasis wrote his book were the generation following him in the medical profession; the evidence for this is that although he begins by addressing them conventionally in the plural he soon lapses into the singular, which he would scarcely do if he had in mind the sons of his body.

As to the date of his death, there is no reason to suppose that Leo Africanus was far wrong in giving this as A.H. 404/A.D. 1013.⁴

¹ For the sources for our knowledge of our author's life, of the extant Arabic manuscripts of his work, and of Western translations and studies of it, see Sami Khalaf Hamarneh and Glenn Sonnedeker, *A Pharmaceutical View of Abulcasis al-Zahrāwī in Moorish Spain* (Leiden, 1963). The title is far narrower than the matters discussed in the book.

² Hamarneh and Sonnedeker (op. cit., p. 17) give a long list of these, for which they do not claim completeness. To it may be added: Albuchasis, Bulcasis, Albucasius, Alsarabius, Açararius, and Ezaharagui.

³ Hamarneh and Sonnedeker, op. cit., p. 15.

⁴ For a discussion of the evidence, see Hamarneh and Sonnedeker, op. cit., pp. 18-22.

Leo's brief biography of our author, in his *De viris quibusdam illustribus apud Arabes*, is often alluded to by writers on Albucasis but seldom quoted, so it is here given in full:¹ 'De Ezaharagui Medico. *Ezaharagui* fuit medicus *Mansori*, Cordubæ Consiliarij, & proximus Rasis, qui composuit Librum, sicut *Canon* Avicennæ in arte Medicinæ, utilissimum quidem: quo etiam adhuc Maumedani Medici utuntur. Vixit autem annos centum & unum. Qui obiit anno *Belli Cordubæ*, de Elhegira anno quadringentesimo quarto.' The statement that he lived 101 years must be rejected, not that it is intrinsically impossible, especially as 101 *hijrî* years are only 97 solar years, but because it would make Albucasis twenty years old when al-Zahrā' was founded and he would not have been known as al-Zahrāwî unless he were born there.

The *Surgery* to which the present volume is devoted is the last² of the thirty treatises comprising his *Kitāb al-taṣrīf li-man 'ajiza 'an al-ta'ālīf*. This title is hard to render into elegant English; a literal and inelegant translation is: 'The Book of enabling him to manage who cannot cope with the compilations', the implication being that it is a self-contained manual of the medical art in all its branches; the user need refer to no other work.

The first treatise contains information on 'the elements and the mixtures' (i.e. the various sorts of temperament), the compounding of drugs, and anatomy. The second contains 'the sections on diseases and their symptoms, and instructions for their treatment'. In size it is fractionally larger than the *Surgery* (which accounts for one-fifth of the whole work). The first and second treatises were translated in the mid-thirteenth century into Hebrew and thence into Latin, appearing at Augsburg in 1519 under the title of *Liber theoricæ nec non practicæ Alsaharavii*. The twenty-sixth treatise is on 'diets for the sick and many of the healthy, arranged according to diseases'. The twenty-ninth is on 'the naming of drugs in various languages, how one can be used in place of another, the stabilization of drugs, compounded and otherwise, the explanation of the compound names occurring in medical books, and weights and measures'. The other twenty-five treatises, totalling some forty-six per cent of the whole, deal with materia medica, the preparation and uses of drugs, pills, ointments, plasters, and so on. The twenty-eighth treatise, on 'the improvement of medicines, the burning of mineral stones and the medical uses thereof', was translated via Hebrew into Latin at the end of the thirteenth century and became widely known in Europe

¹ From J. H. Hottinger, *Bibliothecarius quadripartitus* (Zürich, 1664), p. 256.

² Of the two Bodleian manuscripts, Huntington 156 calls it 'the tenth treatise', while Marsh 54 calls it 'the eleventh part'.

under the title of *Liber Servitoris*, particularly after its first printing, by Nicolaus Jenson, at Venice in 1471.

The thirtieth treatise, the *Surgery*, is the first rational, complete, and illustrated treatment of its subject. The author's declared purpose was to revive the art of surgery as taught by 'the Ancients', the content of which term ranges from Hippocrates to Paulus Aegineta, whose lifetimes were separated by some eleven hundred years. Nowhere is his reverence for his predecessors more plainly indicated than at the end of III, 1 (i.e. Chapter One of Book Three), where, speaking of 'some ignorant bone-setters' who break a bone again if, after being broken and set, it has mended crookedly, he says: 'This operation of theirs is mistaken and dangerous; if it were right the Ancients would undoubtedly have spoken of it in their books and would have used it.' How greatly he was indebted to the Ancients will be seen in the ensuing Commentary. But from the numerous case-records and other personal observations interspersed throughout the work it is evident that the author was a working doctor, a practical surgeon. Like Paulus Aegineta, his principal source, he draws both on the writings of his predecessors and on his own experience. He describes many operative procedures and instruments which do not appear in extant classical writings and which may therefore be regarded as his own, or at least as being part of distinctively Arab practice. The following instances merit special attention in this respect.

The tonsil guillotine and its use (II, 36); the concealed knife and its case for opening abscesses (II, 46 and fig. 112); the trocar for paracentesis (II, 54); the possibility that Albucasis or his contemporaries invented true scissors (II, 57 and several figures); the syringe (II, 59); the lithotrite (II, 60); and his design of vaginal speculum (II, 77). This chapter on gynaecological instruments gives reason for thinking that Albucasis anticipated Chamberlen's obstetric forceps, though not for a live delivery. Then there is the use of animal gut as suture material (II, 85); the description of, possibly, thrombophlebitis migrans (II, 93); the well-illustrated account of the reducing table for extending limbs in order to reduce dislocations or displaced fracture ends (III, 31); and the formula for a kind of plaster casing anticipating the modern plaster cast (III, 27).

The fame of the *Surgery* spread rapidly in the Islamic world. In the second half of the twelfth century it was translated into Latin at Toledo by Gerard of Cremona, under the title of *Liber Alsaharavi de cirurgia*, and its influence thenceforth on Italian and, subsequently, French surgeons was enormous. We may instance William de Saliceto in the thirteenth century

and, in the next century, Guy de Chauliac, the most celebrated surgeon of the age, who ranked Albucasis with Hippocrates and Galen. Fabricius ab Aquapendente (1533–1619) named the three authors, one Roman, one Greek, one Arab, to whom he owed much: Celsus, Paulus Aegineta, and Albucasis. The first appearance of Gerard's version in print was together with Guy de Chauliac's *Cyrurgia parva* (Venice, 1497; two more editions in 1499 and 1500). Further editions from the press at Venice of Lucantonio de Giunta the Florentine appeared in 1520, 1532, and 1540, the first and second of these together with the *Chirurgia* of the Bolognese surgeon Pietro d'Argellata (d. 1423).

In the fifteenth century a Turkish translation, entitled *Ḥarrāḥiye-i Ilkhāniye*, was made by Sabunju-oghlu Sharaf al-Dīn ibn 'Alī al-Ḥājj Ilyās. This version is remarkable for the illustrations,¹ which show not only the instruments but the patient and the surgeon too, in the act of performing the various operations.

The first modern edition of the text, with a Latin translation, appeared at Oxford in 1778. This was John Channing's two-volume *Albucasis de chirurgia, arabice et latine*. It includes some rather uninformative figures of the instruments, not true copies of the drawings in the two Bodleian manuscripts. The footnotes show that Channing had access to a manuscript at or from Aleppo, and that he constantly referred to the Venetian Latin versions of 1500, 1532, and 1540. In principle he gives the text of Huntington 156, noting the variant readings of Marsh 54. He evidently adopted this course because the former is beautifully written, whereas the latter is extremely untidy; nevertheless, he was aware of the superiority of Marsh 54, which he thought had probably been written by a medical man for his own use. Of the scribe of Huntington 156 he says (page v): 'Ex vulgari Librariorum grege, qui libris describendis victum quaeritant, videtur oriundus', though in a marginal note in the manuscript (fol. 72b) the scribe is named as 'the physician Ibn Faḍl Allāh'. Further evidence for the scribe's being a medical man is seen in another marginal note (fol. 11b) against I, 21: 'Our master Latīf—long may his glory and success continue—directed that the cautery should be drawn in red ink in the figure of the cannula, and said, in his copy from which I have made the present copy, "even though the manner of the operation [*sic*] is not so in the original, it will be of lasting use for making things easier and for purposes of instruction"'. Channing seems to have derived his unflattering impression of the scribe of Huntington 156 from

¹ The illustrations are beautifully reproduced in Pierre Huard and Mirko Drazen Grmek, *Le Premier Manuscrit chirurgical turc* (Paris, 1960).

his constant marginal admonitions at every mention of wine in the text, even when it is prescribed as an enema; e.g. in a note on II, 85 (at lines 119-20 of that chapter in the present edition) we read: 'The scribe says wine is putrescent and it is not lawful to introduce anything putrefied; moreover it is impure and forbidden by God and His Prophet. The use of wine is not lawful for Muslim patients, who believe in God and His Prophet.' Because Marsh 54 is free of any such marginalia, Channing thought it doubtful whether its scribe was a Muslim, but of course not every Muslim scribe would take it on himself to lecture his readers in this officious way; if they were Muslims they would not need such warnings, if they were Jews or Christians they would scarcely be swayed by them. In fact the scribe of Marsh 54 was a Muslim, as is clear from his name: Muḥammad ibn al-Mujtahid Taḥsīn (?) *al-'aṭṭār* (fol. 132b); the last word identifies him as a druggist-perfumer.

John Channing deserves further notice. He was not a doctor. This is clear from his accepting Guy de Chauliac's surgical opinion in matters of doubt, for example in II, 63. He was apprenticed to his father, also John Channing, in 1718 and became a Member of the Society of Apothecaries in 1726. He became Master of the Society in 1771. In the meantime he had formed a close friendship with Dr. Thomas Hunt, Canon of Christ Church and Professor of Arabic and Hebrew, and presumably learned Arabic from him. In 1764 the Dean and Chapter of Christ Church elected Channing to a Studentship. The Dean of Christ Church's Register does not name the Canon who made the nomination, but we may suppose that Dr. Hunt was responsible. Two years later, in 1766, there was published in London Channing's *Rhazes de variolis et morbillis, arabice et latine, cum aliis nonnullis ejusdem argumenti*. For this he had used a manuscript in Leiden, a transcript of which was obtained for him by the good offices of Charles Yorke, Lord Chancellor. In 1774 the Delegates of the University Press agreed to the publication of *Albucasis de chirurgia* 'in the manner proposed by Mr. Channing in his letter to Dr. Hunt'. It was agreed to publish in two styles, 100 on 'Royal Paper' of which 25 would go to Channing, and 250 on medium paper of which 25 would go to Channing. Sad to relate, this good man died late in 1775 and the correcting of the proofs was handed over to John Uri. The publication of the book in 1778 was therefore more than two years posthumous.

The first translation of the *Surgery* into a modern language was Lucien Leclerc's French version, originally published serially, then issued, with an introduction, in book-form: *La Chirurgie d'Albucasis* (Paris, 1861).

In 1908 a lithograph of a poor Arabic text, with stylized figures of the instruments, was published in Lucknow.

As to the present edition, the division of labour was as follows. M. S. S. was responsible for copying the drawings from the two Bodleian manuscripts and for the Commentary. G. L. L. prepared and typed the Arabic text. Both took a hand in the English translation, the footnotes to it, and this Introduction.

There follow details of the seven manuscripts on which our text is based. The letter preceding each is the symbol by which we subsequently refer to it.

A. Ahmet III 1990, at Topkapı Sarayı in Istanbul, undated (probably seventeenth century). 171 folios, 26.5 × 17.5 cm., 15 lines to a page, fine *naskh*. The instruments are shown in red and black water-colour.

B. Hacı Beşir Ağa 503, at the Süleymaniye Library, Istanbul, dated Thursday 18 Sha'bân 1115/23 December 1703. 570 folios, 19.5 × 11.7 cm., 33 lines, fine *naskh*. The copyist's name was 'Ubayd. Contains the whole of the *Kitāb al-taṣrif*.

H. Huntington 156, at the Bodleian Library, Oxford, dated 870/1465-6. 172 folios, 26.7 × 17 cm., 16 lines, *naskh*. The copyist was Ibn Faḍl Allāh *al-ṭabīb*.

M. Marsh 54, at the Bodleian, dated 670/1271-2. 133 folios, 20.5 × 13.75 cm., 21 lines, a sprawling and untidy *naskh*. The text often differs quite radically from that of the other manuscripts, as will be seen in the notes to the translation. The copyist was Muḥammad ibn al-Mujtahid Taḥsīn (?) *al-'aṭṭār*.

P. Khuda Bakhsh 2146 (also known as Bankipore 17), at the Khuda Bakhsh Library, Patna, dated Saturday 7 Muḥarram 584/8 March 1188 (though this was a Tuesday). 240 folios, 19 × 14 cm., 16 lines, fine large *naskh*. This is the oldest of the dated manuscripts of the *Surgery*.

S. Hacı Beşir Ağa 502, at the Süleymaniye, dated 18 Ramaḍān 902/1 June 1496. 736 folios, 22 × 10.8 cm., 33 lines, a beautiful but not always clear Persian hand. Contains the whole of the *Kitāb al-taṣrif*.

V. Veliüddin 2491, at the Süleymaniye, dated end of Jumādā II 669/February 1271. 228 folios, 25 × 19 cm., 20 lines. A clear Maghribī script but deficient in diacritical points. The copyist, who made the copy for his own use (*katabah li-nafsih*) was a Jewish doctor, Abū 'l-Zahr ibn 'Abd Allāh ibn Abī Zahr al-Isrā'īlī *al-mutaṭabbib*.

Of these seven manuscripts, six have been fully collated. The exception is S, a microfilm of which was obtained at a relatively late stage. This has been partially collated; that is to say, it has been consulted wherever there was a crux and, for the rest, skimmed.

The spelling has been normalized but no attempt has been made to put right the fractured syntax of, for example, the first few lines of II, 26, where the sense is plain and the variant readings point to a faulty construction going back to the original. Dual verb or dual adjective with dual subject has not been restored (if this word is not too much of a *petitio principii*) unless there is authority in at least one manuscript (of all the manuscripts, B is the most careful on this and other grammatical points). Such fluctuations of gender as that of *miḥqan* between lines 16 and 18 of II, 59, which is in all the manuscripts, have been preserved. So too with *mibḍa'* in II, 95 (line 92), and *mankib* in III, 26, and the variation of *aḥad* and *iḥdā* in II, 64 and 65.

One small inconsistency should be pointed out, which resulted from a change of policy made when some forty chapters of Book I had already been typed: it was then decided to omit the *in shā' Allāh*, 'if God will', with which some of the manuscripts end every description of a treatment which should lead to a cure. The practice adopted for the remainder of the text was to omit the formula unless it occurred in all of the manuscripts, on the assumption that no scribe would leave it out if it were in the text from which he was copying, but might well insert it if it were not. Indulgence is also craved for the use in the Arabic text of the turned comma in place of the full stop, which may strike Arab readers as odd.

The critical apparatus is eclectic, since to reproduce the complete collation would have meant an inordinate increase in the size of the book, for very little gain. The minimal aim has been to indicate readings (a) which give a different sense from the reading adopted but are not impossible; (b) which have been rejected in favour of a conjectural reading; and (c) which are of grammatical, lexical, or orthographic interest. Translations of the more important variants have been supplied.

Some of the abbreviations used in the apparatus should be made clear:

codd. denotes the reading of all the manuscripts.

cett. denotes the reading of all manuscripts but those specified.

A¹ denotes a correction or addition by the original scribe of A.

A² denotes a correction or addition by a second hand in A.

A denotes that the reading in A is unclear.

A s.p. denotes that the reading in A is without diacritical points.

For the non-Arabist reader it must be explained that the Arabic letters *b*, *t*, *th*, *n*, and *y* all have the same outline and are distinguished only by dots above or below (except that *n* and *y* have distinct forms when they end a word). The same is true of *j*, *h*, and *kh*; of *d* and *dh*; of ' and *gh*; of *s* and *sh*; of *ṣ* and *ḍ*; of *ṭ* and *ẓ*; of *f* and *q*; of *r* and *z*. As short vowels and the doubling of a consonant are not shown in normal Arabic writing, what this means in practice is that in a text with no, or few, diacritical points, such as our V, it may be impossible to distinguish, except by the context, between *khubb* 'bread' and *jayr* 'lime'; *thalātha* 'three' and *yalīh* 'it is adjacent to it'; *ba'r* 'dung' and *thaghr* 'gap'; *bi-dhālik* 'thereby', *yudlak* 'it is rubbed' and *yadulluk* 'it will show you'; *urbīya* 'groin' and *arnaba* 'wing of the nose'.

The numerals in the text which refer to the notes in the apparatus are either single (indicating a variant for the single word preceding or an addition at that point in the text) or paired and in parentheses. Their use is best shown by example. At the very beginning of our text, the ¹ following قال refers to an insertion (denoted by pointed brackets in the apparatus) in P; that is, P alone gives, between قال and واضح, the words shown between pointed brackets in note 1. They are relegated to the apparatus because there is no reason to suppose that they formed part of the original text. The next entry in the apparatus belongs with the ² following رأيت. The 'P' shows that the reading in the text is that of P; the 'cett.' shows that the reading is that of all the manuscripts but P. The meaning of the third note is that the word لكم preceding the ³ in the text is omitted by P.

Pairs of figures, in parentheses, are placed round readings in the text that are more than one word long. Thus note 10 to the first page of the text shows that the six words within the (10. . . 10) in line 14 were omitted by the scribe of P, but a second hand in P had attempted to restore two of them.

The works of reference cited in the footnotes by the names of their authors are as follows:

- | | |
|------------------|--------------------------------------------------------------------------------------------|
| Colin and Renaud | G. S. Colin and H. P. J. Renaud, <i>Glossaire sur le Mans'uri de Razès</i> (Rabat, 1941). |
| Dozy | R. Dozy, <i>Supplément aux dictionnaires arabes</i> (2nd edition, Leiden and Paris, 1927). |
| Fonahn | A. Fonahn, <i>Arabic and Latin Anatomical Terminology</i> (Kristiania, 1922). |
| Lane | E. W. Lane, <i>Arabic-English Lexicon</i> (London, 1863-1893). |

Siggel

A. Siggel, *Arabisch-deutsches Wörterbuch der Stoffe
aus den drei Naturreichen* (Berlin, 1950).

It remains to express our appreciation of the kindness of the Librarians of the Süleymaniye, the Topkapı Sarayı, the Bodleian, and the Khuda Bakhsh Libraries, in making available to us photographic copies of manuscripts in their collections.

TEXT AND TRANSLATION

AFTER finishing for you, my sons, this book which is the part of knowledge dealing with medicine in its entirety; and having made it as clear and explicit as possible, I thought it well to complete it for you by adding this treatise which concerns surgical operating. For the skilled practitioner of operative surgery is totally lacking in our land and time; so that the knowledge of it is on the point of being blotted out and its remains lost; and there is nothing left of it except a few traces in the books of the Ancients; where, however, it has been so corrupted by the hands of scribes, and subjected to error and confusion, that its meaning has become obscured and its value diminished. Therefore I decided to revive this art by expounding, elucidating, and epitomizing it in this treatise; and to present the forms of the cauterizing irons and other operative instruments, since this is an adjunct to explanation and a vital necessity. Now this is the reason why there is no skilful operator in our day: the art of medicine is long and it is necessary for its exponent, before he exercises it, to be trained in anatomy as Galen has described it, so that he may be fully acquainted with the uses, forms, and temperament of the limbs; also how they are jointed, and how they may be separated; that he should understand fully also the bones, tendons, and muscles, their numbers and their attachments;¹ and also the blood-vessels, both arteries and veins, with their relations.² And so Hippocrates said: 'Though many are doctors in name, few are in reality, particularly on the surgical side.' We have already spoken of this in the introduction to this book. For he who is not skilled in as much anatomy as we have mentioned is bound to fall into error that is destructive of life. Thus I have seen many

¹ Lit. 'exits'.

² Lit. 'places of exit'.

THE general introduction offers several points of interest. It makes clear that the medical writings of the classical authors were well known. Albucasis shows himself to be well read in the ancient masters by his quotations from Hippocrates and Galen. But his own treatise also shows that these and the numerous later classical writings were, to the generality of his colleagues, little more

than academic and almost totally lacked reflection in practical experience and teaching. This he explains as being due to clerical errors in transcribing; but that this again arose from the lack of corroborative experience in the contemporary profession; so that it became impossible to keep a check on the accepted writings and their accuracy. Albucasis himself, however, was one of the

قال¹ واضع هذا الكتاب لما أكملت لكم يا بنى هذا الكتاب الذى هو جزء العلم فى الطب بكماله وبلغت الغاية فيه من وضوحه وبيان رأيت² أن أكمله لكم³ بهذه المقالة التى هى جزء العمل باليد لأن العمل باليد محسنه فى بلدنا وفى زماننا معدوم البتة حتى كاد أن يدرس⁴ علمه وينقطع أثره وإنما بقى منه رسوم يسيرة فى كتب الأوائل قد صحفته⁵ الأيدى وواقعه الخطأ والتشويش⁶ حتى استغلقت معانيه وبعدت فائدته، فرأيت أن أحياه وأؤلف فيه هذه المقالة على طريق الشرح والبيان والاختصار وأن آتى بصور حدائد الكلى وسائر آلات العمل إذ هو⁷ من زيادة⁸ البيان ومن وكيد ما يحتاج إليه، والسبب الذى لا يوجد⁹ صانع محسن¹⁰ بيده فى زماننا هذا لأن صناعة الطب طويلة وينبغى لصاحبها أن يرتاض قبل ذلك فى علم التشريح الذى وصفه جالينوس حتى يقف على منافع الأعضاء وهياتها ومزاجاتها واتصالها وانفصالها ومعرفة العظام والأعصاب والعضلات وعددها ومخارجها¹⁰ والعروق النوايض والسواكن ومواضع مخارجها، ولذلك¹⁰ قال¹¹ ابقرات¹² إن الأطباء بالاسم كثير¹² وبالفعل قليل¹³ ولا سيما فى صناعة اليد، وقد ذكرنا نحن من ذلك طرفا فى المدخل من هذا الكتاب لأنه من لم يكن عالما بما ذكرنا من التشريح لم يخل أن يقع فى خطأ يقتل

cett. فرأيت، P. 2. P. <الحكيم الفاضل خلف بن عباس الزهراوى> 1.

P. تدرس، cett. P² 6. AP. صفحته 5. B. يندرس 4. om. P. 3.

صانعا محسنا BH, 9. BP, زيادات 8. AH, om. S. 7. هن

كثيرة 12. P. <الفاضل> 11. P². روق الضارب، P. om. 10. cett.

AH. قليلة 13. AH.

laying claim to this knowledge and boasting of it, but having neither knowledge nor experience. I saw an ignorant doctor incise a scrofulous tumour in a woman's neck; and he cut certain arteries in the neck so that the woman bled until she fell dead before him. And I saw another doctor presume to take out a stone from a man of advanced age. The stone was large; he rushed blindly at the task and extracted the stone and with it a piece of the bladder itself; and the man was dead in about three days. I had myself been previously called in to extract the stone but from what I saw of the size of it and the condition of the patient I judged that the outcome would be so. I saw another doctor who had a regular salary from one of the high officers of our country for medical treatment. There had occurred to a negro boy of his a fracture of the leg near the heel, together with a wound; the doctor rushed in, in his ignorance, and bound up the fracture, over the wound, very tightly, with pads and splints, not allowing the wound to breathe. He then let him go as he wished and then dismissed him for some days bidding him not to loose the bandage. Eventually his leg and foot swelled and he was close to death. I was called in and made haste to loose the bandage, upon which some ease and reduction of the pain followed. Nevertheless, gangrene had already taken hold on the limb and I could not hinder its progress; it continued to extend in the limb until he perished. And I saw another doctor incise a malignant tumour; after some days the place broke out in open ulceration, thereby adding to the misery of the patient. For a cancer that arises from a melancholic humour should never be touched by the knife unless it should happen to be in a

few that did possess the actual experience that qualified him to teach: in the course of his work he describes a number of cases to illustrate the mixture of stupidity and inexperience that characterized most of his medical brethren. But he also gives clinical descriptions of some of his own cases. These

show that he himself, like Rhazes (al-Rāzī) a century before him, was one of those who were not merely 'doctors in name'. His younger contemporary Avicenna (Ibn Sīnā) was another such; his *Qānūn* had an appendix, now lost, that described many cases from his own practice.

الناس به كما قد شاهدت كثيرا ممن تصوّر في هذا العلم وادّعاءه بغير علم ولا دراية، وذلك أنّي رأيت طبيبا جاهلا قد شقّ على ورم خنزيرى 20 في عنق امرأة فأبرى بعض شريانات العنق فنزف دم المرأة حتى سقطت ميتة بين يديه، ورأيت طبيبا آخر قد تقدّم في اخراج حصاة لرجل قد طعن في السنّ وكانت الحصاة كبيرة فتهمّز¹⁴ فأخرجها بقطعة من جرم المشانة فمات الرجل الى نحو ثلاثة أيّام، وكنت قد دعيت الى اخراجها فرأيت من عظم الحصاة وحال العليل ما قدّرت عليه ذلك، 25 ورأيت طبيبا آخر كان يرتزق عند بعض قواد بلدنا على الطبّ فحدث لصبي¹⁵ اسود كان عنده كسر في ساقه بقرب العقب مع جرح فأسرع الطبيب بجهله فشّد الكسر على الجرح بالرفائد والجبائر شدا وثيقا ولم يترك للجرح تنفّسا ثمّ اطلقه على شهواته ثمّ تركه أيّاما وأمره أن لا يحلّ الرباط حتى تورّم ساقه وقدمه وأشرف على الهلاك فدعيت اليه 30 فأسرعت حلّ¹⁶ الرباط فنال الراحة واستقلّ من اوجاعه إلا أنّ الفساد قد كان استحكم في العضو ولم أستطع ارداعه فلم يزل الفساد يسعى في العضو حتى هلك، ورأيت طبيبا آخر بطّ ورم سرطانيا فتقرّح بعد أيام حتى عظمت بلية صاحبه وذلك أنّ السرطان اذا كان محضا من خلط سوداوى فإنه لا ينبغي أن¹⁷ يتعرض له¹⁷ بالحديد البتّة إلا أن

P, فتصور S, فتتوت عليها B, فتور عليها A, فتصور عليها P¹. 14.

A, يتعرض اليه 17. ABV. في حل 16. ABV. لصقلي 15. V. فتعور عليها

B. يتعرض له

part of the body which may be removed thoroughly and in its entirety.

Wherefore you must know, my sons, that operative surgery is divided into two parts, namely, where operation is associated with the health of the patient, and, on the other hand, where it is for the most part fraught with danger. Throughout the following book I point out wherever I have described an operation that is accompanied by fear and danger. It behoves you to be wary and to shun such, lest the ignorant have an opportunity to reproach and slander you. Show, then, caution and care for yourselves and gentleness and perseverance for your patients. Take the best road that leads to health and a happy outcome. Illnesses that are very threatening or difficult to cure, leave alone. Purify yourselves of anything which you fear may cause doubt as to your religious life and your secular life; for this will perpetuate your good name and will elevate your fortunes in this world and the next. For Galen once said in certain of his admonitions: 'Do not treat mischievous maladies lest you get the name of mischievous doctors.'

I have divided this treatise into three books:

BOOK ONE. Concerning the actual cautery; and cauterization by caustics. It is divided into chapters set in order from the head to the feet. The shapes of the instruments are shown and the iron cauteries and all things necessary for operating.

BOOK TWO. Concerning incision and perforation; blood-letting and cupping; wounds and the extraction of arrows and the like. The whole is divided into chapters in order; and illustrations of instruments are given.

BOOK THREE. Concerning the setting of bones; dislocations; the treatment of sprains and the like. This is similarly divided into chapters set in order from head to feet, with illustrations of instruments.

35 يكون في عضو يحتمل أن يستأصل¹⁸ جميعه، ولهذا يا بنى ينبغي لكم أن تعلموا أن العمل باليد ينقسم قسمين عمل تصحبه السلامة وعمل يكون معه العطب في أكثر الحالات وقد نبهت¹⁹ في كل مكان يأتي من هذا الكتاب العمل²⁰ الذي فيه الغرر والخوف فينبغي لكم أن تحذروه وترفضوه لئلا يجد الجاهل السبيل الى القول والطعن فخذوا لأنفسكم بالحنم والحيطة ولمرضاكم بالرفق والتثبت واستعملوا الطريق الافضل 40 المؤدى الى السلامة والعاقبة المحمودة وتنبؤوا الامراض الخطيرة العسيرة البرؤ ونزهوا انفسكم عما تخافون أن يدخل عليكم الشبهة في دينكم ودنياكم فهو ابقى لجاهكم وارفع في الدنيا والآخرة لأقداركم، فقد قال جالينوس في بعض وصاياه لا تداووا مرض سوء فتسموا أطباء 45 سوء،

وقد قسمت هذه المقالة على ثلاثة ابواب، الباب الاول في الكى بالنار والكى بالدواء الحاد مبوب مرتب من القرن الى القدم وصور الآلات وحدائد الكى وكل ما يحتاج اليه في العمل باليد، والباب الثانى في الشق والبط والفصد والحجامة والجراحات وإخراج السهام 50 ونحو ذلك كله مبوب مرتب وصور الآلات، والباب الثالث في الجبر والخلع وعلاج الوشى ونحو ذلك مبوب مرتب من القرن الى القدم وصور الآلات،

18. P. استياصل 19. P2 cett. , سميت 20. A. على العمل

BOOK ONE

ON CAUTERIZATION

Before we expatiate on the actual operation of cautery it is necessary to mention its advantages and disadvantages and the temperament upon which it is to be used. I say that a discourse on the advantage and disadvantage of cautery is a long one, a subtle learning, a hidden secret. A great number of wise men have spoken on the subject with differing opinions. Lest I should be over long I have reduced their opinions to a summary.

Now I say that the cautery has universal application for every ill constitution, whether organic or functional, with the exception of two: the functional hot temperament and the functional dry temperament. About the organic dry temperament the Ancients differed, some saying that cautery helps in a constitution of this kind, while others said the opposite: that cautery is of no use in a disease caused by heat or dryness; for fire is naturally hot and dry and it is obviously absurd to treat a hot dry sickness with a hot dry remedy. But he who holds the opposite view says that actual cautery may help in the case of such hot dry illnesses as arise in the human body; for when you compare the human body, humid as it is, with the nature of fire you find the human body cold. I myself from much experience agree with this last opinion. However, no one should attempt this operation unless he has had long training and practice in the use of the cautery, and is fully acquainted with the various human temperaments, and the character of the complaints in themselves; their causes, symptoms, and duration. Concerning the rest of the temperaments there is no reason for fear, particularly

BOOK ONE. INTRODUCTION

The hot iron was one of the earliest and most popular means of treatment. Hippocrates speaks of it as a well-established way of opening a liver abscess; and every later writer gives plenty of room to the subject of the cautery, as will be noticed in the following chapters. This introduction is fuller in

its discussion than the classical authors and suggests the extent to which the practice of cauterization was taken by the Arabs.

Cauterization using gold seems to have been first proposed as a general measure by Avicenna in para. 1072 of the *Qānūn*. Albucasis speaks of it as having been proposed

الباب الأول في الكيّ وقيل أن نذكر العمل به ينبغي أن نذكر
 كيفية منافعه ومضاره وفي أي مزاج يستعمل ، فأقول إن الكلام في
 كيفية منفعة الكيّ ومضاره كلام طويل وعلم دقيق وسرّ خفي وقد تكلم
 فيه جماعة من الحكماء واختلفوا فيه وقد اختصرت من كلامهم اليسير
 5 مخافة التطويل ، فأقول إن الكيّ ينفع بالجملة¹ لكلّ سوء مزاج² يكون مع
 مادة وبغير مادة حاشي مزاجين وهما المزاج الحارّ من غير مادة
 والمزاج اليابس من غير مادة فأما المزاج اليابس مع مادة فقد
 اختلفوا فيه فقال بعضهم إن الكيّ نافع فيه وقال آخرون بضدّ ذلك
 إن الكيّ لا يصلح في مرض يكون من الحرارة واليبوسة لأن طبع النار
 10 الحرارة واليبوسة ومن المحال أن يستشفى من² مرض حارّ يابس بدواء¹
 حارّ يابس، وقال الذي يقول بضدّ ذلك إن الكيّ بالنار قد ينفع
 من مرض حارّ يابس يحدث في أبدان الناس لأنك متى أضفت بـ بدن
 الانسان ورطوبته الى مزاج النار أصبت بدن الانسان بارداً ، وأنا أقول
 بقوله لأن التجربة قد كشفت لي ذلك مرّات ألا أنّه لا ينبغي أن
 15 يتصوّر على ذلك الأمر إلا من قد ارتاض ودرب في باب الكيّ دراسة
 بالغة ووقف على اختلاف مزاجات الناس وحال الامراض في انفسها
 واسبابها واعراضها ومدّة زمانها ، وأما سائر الامزجة فلا خوف عليك

1. V. بكل مزاج ، P² «سوء» ، P مزاج ، BS لكل مزاج . 2. om. P.

the cold and humid distempers; all medical men are agreed and none differs concerning the utility of the cautery in such cases. Now you should know, my sons, that the actual cautery and its superiority over cauterization with chemical caustics is one of the secrets of medicine. For fire is a simple substance having no action except upon the actual part cauterized; nor does it do more than slightly harm any adjacent part. But the effect of cauterization with caustic may spread to parts at a distance from that burnt; and also in the part cauterized it may give rise to a disease difficult to cure or even fatal. Whereas fire, on the other hand, on account of the nobility of its nature and its superiority has no such effect unless it is overdone. That has become clear to us by experience through length of service, devotion to the art, and acquaintance with the facts of the matter. So I need not prolong this discourse. Were it not inappropriate to this my book I should relate to you a deep secret concerning fire, the manner of its action on bodies and its expulsion of diseases; with a reasoned philosophical discourse too subtle for your understanding.

Know also, my sons, that the Ancients disagreed also as to the fit time for cautery, affirming that spring was the best. Myself, I say that the cautery is suitable at all times; for whatever harm may arise from the season of the operation is utterly outdone by the benefit deriving from the cauterization itself; especially if the cautery is applied to pains that are severe, grievous, and swift, brooking no delay, because of the fear that the consequences may be more grave than the slight harm from the season.

by the Ancients; but the only reference is found in Priscianus' *Logicus*, 22, recommending it for haemorrhage from the throat. After the Arabs, William of Saliceto speaks of gold as the most noble of metals for cauterization. But the earliest metal used for the cautery seems to have been bronze; it

was that traditionally used by the Amazons for the destruction of the right breast. Hippocrates, on *Airs, Waters, and Places*, (17) says that the women applied to the breast a *χάλκειον τετεχνημένον*—a bronze made for the purpose.

منها ولا سيما الامراض الباردة الرطبة فقد اتفق جميع الاطباء عليها
 ولم يختلفوا في النفع بالكى فيها ، واعلموا يا بنى آن من سرتعالج
 الكى³ بالنار وفضله على الكى بالدواء المحرق لأن النار جوهر مفرد لا
 يتعدى فعله العضو الذى كوى ولا يضرّ بعضو آخر متصل به إلا ضرا
 يسيرا ، والكى بالدواء المحرق قد يتعدى فعله الى ما بعد من
 الاعضاء وربما احدث في العضو مرضا تعسر مداواته وربما قتل ، والنار
 لشرفها وكرم جوهرها لا تفعل ذلك إلا أن افرطت، وقد اتضح لنا
 ذلك بالتجربة لطول الخدمة والعناية بالصناعة والوقوف على حقائق
 الأمر⁴ ولهذا⁵ استغنيت عن طول الكلام ، ولو لا أنه لا يليق بكتايبى
 هذا لأوردت عليكم في النار سراً غامضا وكيفية فعلها في الاجسام
 ونفيها للامراض بكلام فلسفى برهاني يدق عن افهامكم،
 واعلموا يا بنى أنهم قد اختلفوا في الزمان الذى يصلح فيه الكى
 وجعلوا افضل الزمان زمان الربيع، وأنا اقول إن الكى قد يصلح
 في كل زمان من اجل أن الضرر الواقع من قبل الزمان يستغرق فى
 المنفعة التى تستجلب بالكى ولا سيما إن كان الكى من اوجاع ضرورية
 قوية محفدة⁷ لا تحتل التأخير لما يخاف منها أن يعقب ببلية هي اعظم
 من يسير الضرر الداخل من قبل الزمان،

3. codd. بالكى 4. BV, ولا cett. 5. P, الامور cett. 6. AS,

B. مخوفه محقره, PV محقرة 7. AS, ولذلك P, ولدا B, ولذا

Nor let enter your minds, my sons, the groundless notion of the laity and of ignorant doctors, that the complaint cured by the cautery never comes back later; do not cleave to this opinion. The fact is not as they think; for the cautery is homologous to the drug which alters the constitution and dries up the humidities that give rise to disorders. But the cautery excels the drug by the rapidity of its success, the strength of its action, and the potency of its powers. It may be that the disease will return at some time according to the temperament of the patient, and the persistence and virulence of the disease; and from the formation of a mass of superfluities in the body; from his neglect of himself in acquiring them from food; and from causes of a similar nature. Of course, if the disease to which the cautery is applied be a slight one, and in a part only slightly liable to superfluities and humidities, as, for example, the cauterization of a molar tooth for toothache, and the like, then it may happen that the pain does not return; but that happens rarely.

Another common saying is that the cautery is the final remedy; which is true, but not in the way which they mean. For they believe that after cauterization no treatment, either with or without medicine, will help. It means something precisely the opposite: after various treatments have been applied to a certain disorder without success, then last of all we apply cauterization and this proves effective; whence comes about the saying that the cautery is the final remedy—not in that sense in which it is popularly held by the laity and by many ignorant medical men.

35 ولا يقع ببالكم يا بنى ما يتوهموه العامة وجهال الاطباء أن الكى
الذى يبرئ من مرض ما لا يكون لذلك عودة ابدا وتجعلوه⁸ لزاما⁹ ،
وليس الامر كما ظنوا من اجل¹⁰ أن الكى انما هو بمنزلة الدواء الذى
يحيل المزاج ويجفف الرطوبات التى هى سبب حدوث الاجاع¹⁰ إلا أن
الكى يفضل على¹¹ الدواء بسرعة نجحه وقوة فعله وشدة سلطانه ، وقد
40 يمكن أن يعود المرض وقتا ما من الزمان على حسب مزاج العليل وتمكن
مرضه وقوته¹² وما يتهايا فى جسمه من اجتماع الفضول فيه واهمال نفسه
فى اكتسابها من الاغذية ونحو ذلك من الاسباب، اللهم إلا أن يكون
المرض الذى يستعمل فيه الكى مرضا¹³ لطيفا وفى عضو قليل الفضول
والرطوبات مثل كى الضرس عن الوجع ونحوه فقد يمكن أن لا يعود فيه
45 ذلك الوجع وذلك يكون فى الاقل¹⁴،

وأما قول العامة ايضا أن الكى آخر الطب فهو قول صواب لا الى
ما¹⁵ يذهبون هم¹⁵ لأنهم يعتقدون أن لا علاج ينفع بدوا ولا بغيره بعد
وقوع الكى والامر بخلاف ذلك وإنما معنى إن¹⁶ الكى آخر الطب إنما
هو أننا متى استعملنا ضرب العلاج فى مرض من الامراض ولم¹⁷ تنجع
50 تلك الادوية ثم استعملنا آخر شئ الكى فينجع فمن هاهنا وقع إن
الكى آخر الطب لا على المعنى الذى ذهب¹⁸ اليه العامة وكثير من

8. PV, cett. ويجعلونه 9. BHV, لزاما A, لزاما P. 10. om. P¹,

add. P². 11. عن H. 12. om. P. 13. موضعا P¹, corr. P².

يذهبونهم فى BSV, يذهبون هم فى ذلك P, 15. P. 14. الأول P.

16. om. AHS. 17. فلم PV. 18. ذهب BH.

The Ancients have stated that cauterization by gold is more effective than by iron. Now they said that on account of the temperateness of gold and its noble character. They also stated that the site of cauterization does not become purulent, but that is not absolutely so; for I myself have experience of that and have found that it happens in some cases and not in other cases. Cauterization by gold is indeed better and more successful than with iron, as they have stated; except that when you are heating the gold cautery in the fire you are uncertain, by reason of the redness of the gold, when it reaches the desired temperature. In addition to this it cools very quickly; and if you overheat it it melts in the fire, melts and runs, and the practitioner finds himself in difficulties. Therefore in our own opinion cauterization is swifter and more successful with iron. Now I have arranged this book on cauterization by chapters, set in order from the head to the foot, to make it easy for the seeker to find what he wants.

وقد ذكرت الاوائل أنّ الكيّ بالذهب افضل من الكيّ بالحديد وانما قالوا ذلك لاعتدال الذهب وشرف جوهره وقالوا إنه لا يتقيح¹⁹ موضع الكيّ وليس ذلك على الاطلاق لأننى قد جرّيت ذلك فوجدته انما يفعل ذلك فى بعض الابدان دون بعض والكيّ به احسن وافضل من الحديد²⁰ كما قالوا²¹ ألا أنك²¹ اذا احميت المكواة فى النار من الذهب لم يتبين لك متى تحمى على القدر الذى تريد لحرمة الذهب ولأنه يسرع اليه البرد وإن زدت عليه فى الحمى ذاب²² فى النار²² وانسبك فيقع الصانع⁶⁰ من ذلك فى شغل فلذلك صار الكيّ بالحديد عندنا اسرع واقرب من الصواب²³ للعمل إن شاء الله وقد رتب هذا الباب فى الكيّ على فصول نظمتها من الرأس الى القدم ليسهل على الطالب ما يريد منه إن شاء الله²³

19. H. يقح , B. يقح , ASV. يفتح . 20. H. الكيّ بالحديد . 21. P. الاوائل .

22. HS. الذهب . 23. om. H.

CHAPTER ONE. On the single cauterization of the head.

This cauterization helps against excessive humidity and coldness on the brain, which cause headache, abundance of defluxions from the head to the regions of the eyes and ears, excess of sleep, toothache, sore throat, and in general any sort of disorder arising from frigidity, such as palsy, fits, apoplexy, and diseases similar to these.

The manner of performing this operation is first to bid the patient open the bowels with an evacuant which will also clear his head, for three or four nights, according to the strength, age, and habits of the patient. Then tell him to have his head shaved; then seat him cross-legged before you, with his hands on his breast. Then place the lower part of your palm upon the root of his nose between his eyes; and where your middle finger reaches mark that place with ink. Then heat an olivary cautery (fig. 1; H only). Then bring it down upon the marked place with one downward stroke with gentle pressure, revolving the cautery; then quickly take your hand away while observing the place. If you see that some bone is exposed, the

BOOK ONE. CHAPTER ONE

The olivary cautery—*πυρηνοειδὲς καυστήριον*—(fig. 1 in the Huntington MS. only) seems to have been the commonest and most useful form of iron cautery. Celsus, in his chapter on diseases of the eyes (vi. 6) and again on chronic headache (iv. 2) mentions cauterization of the head without specifying the shape of the cautery to be used. Caelius Aurelianus (*Morb. Chron.* i. 5) gives the use

of the cautery, among other measures, for epilepsy, but with no description of its shape. Paulus Aegineta (vii. 2) is the first to describe the olive-kernel-shaped iron, giving it this name; he recommended it for the same purpose as in this chapter and also for removing polypi in the nose, opening an empyema, etc. The mode of use described by Albucasis makes it clear

الفصل الاول فى كى الرأس كية واحدة

تنفع هذه الكية من غلبة الرطوبة والبرودة على الدماغ اللتين¹ هما سبب للصداع² وكثرة النزلات من الرأس الى ناحية العينين³ والاذنين وكثرة النوم ووجع الاسنان ووجع الحلق وبالجملة لكل مرض يعرض من البرودة⁴ كالغالج والصرع⁴ والسكات ونحوها من الامراض⁵ ،
صورة هذه الكية أن تأمر العليل أولا بالاستفراغ⁶ بالدواء المسهل المنقى للرأس ثلاث⁶ ليال او اربع⁶ على حسب ما توجب قوة العليل⁷ وسنه⁸ وعادته⁹ ثم تأمره أن يحلق رأسه بالموسى ثم تقعه بين يديك متربعاً قد وضع يديه على صدره ثم¹⁰ تضع اصل¹⁰ كفك على اصل¹¹ انفه بين عينيه¹⁰ فحيث انتهى¹² اصبعك الوسطى¹³ فعلم ذلك الموضع بالمداد ثم احس المكواة الزيتونية التى هذه صورتها¹⁴ :

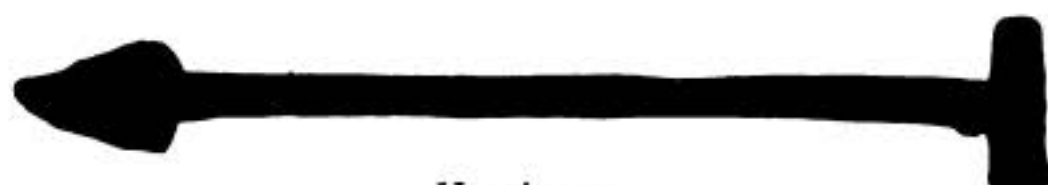


Fig. 1

Huntington

ثم أنزلها¹⁵ على الموضع المعلم بالمداد¹⁶ نزلة تعصر بها يدك قليلا¹⁷ وانت تديرها ثم ترفع يدك مسرعا وانت تنظر الموضع فإن رأيت حينئذ¹⁸
cett. الصداع H. 2. B. اللذين P² الدين P، التى V، الذى 1.
BHS. كالغالج والصداع P. om. 4. H. والعين P، والعنق P² cett. 3.
P، لىالى واربعة 6. B. بالامتناع مما يجب الامتناع منه والاستفراغ 5.
B. وهيئته 8. P. om. 7. H. ليال او اربعا ASV، ليال واربعة
P. انتهيت 12. P. om. 11. H. باصل S، تضع باصل 10. P. و 9.
cett. أنزله BS، 15. P. صفتها 14. B. الاوسط 13.
cett. P، 18. B. قليلا قليلا 17.

size of the head of a skewer or a grain of vetch, then take your hand away; otherwise repeat with the same iron, or, if that has got cold, with another, till the amount of bone I have mentioned is exposed. Then take a little salt dissolved in water; soak some cotton in it, apply to the place and leave for three days. Then apply some cotton soaked in butter and leave it on till the eschar falls off; then dress with *Tetrapharmacum* ointment till healed. The Ancients said that the more a wound is kept open, discharging pus, the better and more efficacious. Some said the skin was to be cauterized through to the bone and the cautery held until some of the thickness of the bone was burnt. Then the burnt bone was to be scraped out, then dressed. Others said that the cautery should be carried through to burn a deep impression in the bone so that there should come out of the bone a piece shaped like a grain of a carob tree or a small spindle-whorl; they asserted that the vapours of the head would be exhaled through this place. The wound should be kept open a long while, then dressed until healed. But these two methods of cauterization I do not consider right except on certain men; and I regard them as risky. In my opinion, to let the patient alone is preferable and safer, if it is to be. For the head is weakened when its natural continuity is broken, as we see in other parts, and particularly when the patient's head is weak by nature. In my opinion the first type of cauterization is safer and better; therefore use that and be safe.

that the olive-shaped head was intended not merely to make a superficial scar but to penetrate deeply by being revolved. At the same time he disagrees with the method of Paulus Aegineta (vi. 2) to burn off a flake from the surface of the bone. In addition to its use in chapters 1 and 2 for headache,

he also suggests its use for loss of memory (chapter 8), hemiplegia (9), epilepsy (10), foetor of the nose (14), dropsy or ascites, used on the back only (31), sciatica (41), gout (44), tremor (54), and arterial haemorrhage (56).

انكشف من العظم¹⁹ قدر رأس الخلال او قدر حبة الكرستة فارفع يدك¹⁹ وآلا
 15 فأعد يدك بالحديدة نفسها او بغيرها إن بردت حتى ترى من العظم
 ما ذكرت لك ثم خذ شيئا من ملح فحلّه في الماء وشرب فيه²⁰ قطننة
 وضعها على الموضع واتركه²¹ ثلاث ايام ثم احمل عليه²⁰ قطننة مشربة ففى
 السمن واتركها عليه حتى تذهب الخشكرشة من النار ثم عالجه بالمرهم
 الرباعى الى أن يبرأ²² إن شاء الله ، وقد قالوا ان الجرح كلما بقى
 20 مفتوحا يمد القبح فهو افضل وانفع ، وذكر بعضهم بأن يكوى الجلد
 الى العظم وتمسك المكواة²³ حتى يحترق بعض ثخن العظم ثم يجرد بعد
 ذلك ما احترق²⁴ من العظم²⁴ ثم يعالج ، وقال آخرون ينبغي أن
 يبالغ بالكى حتى يؤثر في العظم تأثيرا قويا حتى يسقط²⁵ من²⁵ العظم
 كهيئة القيراط او الفلكة الصغيرة وزعموا انه ينفس²⁶ من ذلك الموضع ابخرة
 25 الرأس ويترك الجرح مفتوحا زمانا طويلا ثم يعالج حتى يندمل ،
 ولست أرى هذين النوعين من²⁷ الكى البتة²⁷ آلا في بعض الناس وعلى
 طريق الغرر وتركه عندى افضل ومع السلامة اذا كانت فإن الرأس يعصف
 متى تفرق اتصاله الطبيعى كما قد شاهدناه في سائر الاعضاء ولا سيما
 متى كان رأس²⁸ العليل ضعيفا بالطبع والنوع الاول من الكى اسلم وافضل
 30 عندى وآياه استعمل فاعمل به²⁹ تسلم إن شاء الله²⁹ ،

19. om. H.

20. om. HS. 21. V. اتركها. 22. H. برى. 23. P. المكوى. cett. 24. منه B.

25. P¹. cett. يتنفس. 26. PV. يسقط. V. يسعط. B. ينكشف من. 25. P¹.

27. M. الكيات الثلاثة. 28. om. H. 29. V. تسلم. P. ان شاء الله. 29.

S. يسلم ان شاء الله تعالى. B. والله تعالى اعلم. A. تسلم هو الشافى

CHAPTER TWO. On cauterization of the head (continued).

When the whole head is affected by chronic headache which has for long vexed the patient, and electuaries, laxatives, errhines, oils, and plasters have been applied; and particularly if he has undergone the single cauterization which we have described, all with no effect, then look well, and if his head is naturally strong of structure and is not weak, and if he feels a vehement frigidity, cauterize him over again a little above the first cautery; then cauterize him on each frontal prominence with one cautery so as to remove the thickness of the skin and expose as much of the bone as we have mentioned above; and burn him with one stroke on the hinder part of the head in the place known as the occiput; but in this cauterization be gentle and do not lay bare the bone; for thus the patient would have intense pain, different from that of other head cauterizations. I shall describe this cauterization in its own place. The cautery for the frontal prominences and occiput must be more slender than that for the middle part (fig. 2; H only).

BOOK ONE. CHAPTER TWO

This cure for chronic headache is mentioned by Celsus (iv. 2) but he does not recognize the different forms of cautery for this purpose. The cautery illustrated in chapter 2, in the Huntington MS. only, is not named, but seems to be a slenderer version of the olivary cautery shown above. It is hard to see which end was the actual burning end; the spear-shaped extremity on the left hand

is found as the handle end in almost all the cauteries shown in later chapters. Perhaps the irons in these two chapters had only this one burning end while others later have the handle end shaped to be used as an olivary in addition to the other, more distinctively shaped, end. Gerard of Cremona has departed widely from the original, his olivary having a kind of curved blade.

الفصل الثانى فى كى الرأس أيضا

إذا حدث فى جملة الرأس وجع مزمن وطال ذلك بالعليل واستعمل الإيارجات¹ والقوقايات² والسعوطات والأدهان والضمادات ولا سيما إن كان قد كوى الكية الواحدة التى وصفنا فلم ينفعه شئ من ذلك فانظر فإن كان رأس العليل قوى البنية بالطبع ولم يكن ضعيفا وكان يجد بردا شديدا فاكوه كية أخرى فوق تلك³ قليلا ثم اكوه على كل قرن من رأسه كية حتى يذهب⁴ ثخن الجلد وينكشف من العظم القدر الذى وصفنا واكوه كية فى مؤخر رأسه فى الموضع الذى يعرف بالفأس⁵ وخفف يدك فى هذه ولا تكشف العظم فإن العليل يجد لها ألما شديدا خلاف ألم سائر كيات الرأس كلها وسأذكر هذه الكية فى موضعها ، وينبغى أن تكون المكواة التى يكوى بها قرنا الرأس ومؤخره ألطف من المكواة التى يكوى بها وسط الرأس⁶ وهذه صورتها⁶ :

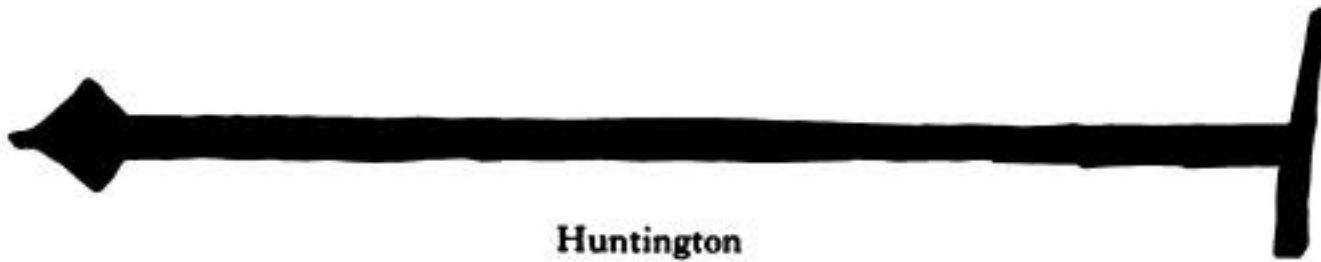


Fig. 2

Huntington

1. B. الادوية والايارجات.
2. om. P.
3. H. تلك الكية.
4. om. P.
5. بالفاس وهو موضع HS, بالفاس وهو الجمجمة, P² بالناس, P بالناس.
6. وهذه صورتها كما يأتى فى 6. A. بالفاييق وهو الحجة, B. الجمجمة وصورتها مثل صورة B, (fig. deest) الصفحة الآتية ان شاء الله تعالى M. (fig. deest) الاولى بل تكون مثل نصفها فى القياس.

CHAPTER THREE. On the cauterization of non-chronic migraine.

When there occurs pain with headache in one side of the head and the pain extends to the eye; and the patient has cleared his head with purging drugs and there has been applied the other treatment that I have mentioned in the sections on diseases, but to no avail; in this disorder cauterization is of two sorts, either with caustic or with the actual cautery. This is the manner of cauterization with caustic: take one clove of garlic; peel it and cut both ends off; then cut open the site of the pain in the temple with a broad scalpel till there is room to contain the clove under the skin; then introduce it under the skin till it lies completely hidden. Then bind up the wound tightly over it with pads and leave for fifteen hours; then unbind it, remove the garlic, and leave the wound open for two or three days; then apply cotton wool soaked in butter till it suppurates. Then dress with ointment till it heals. If you would rather, you may carry it out with one of the caustic drugs that I have included in the eighteenth¹ treatise, on caustics.

¹ So MPV. The other MSS. read 'twelfth'. Caustics do not appear in the table of contents in Hamarneh and Sonnedecker, pp. 38-41.

BOOK ONE, CHAPTER THREE

The bolt or claviform cautery illustrated in both MSS. seems to have been peculiar to the Arabs, and by them used a great deal. Albucasis recommends its use in such diverse complaints as migraine (in this chapter) hoarseness (23), cough (24), ascites, on the front of the body only, (31), dropsy (32), abdominal weakness (33), haemorrhoids (34),

over the kidneys (37) and bladder (38), menstrual irregularities (39), backache (42), and gangrene (52). The form of the instrument is perfectly clear from the description and figures. The idea of the knob in the middle may have been to help retain heat in the cauterizing end. The Arabic term is *mis-māriya*, i.e. nail- or bolt-shaped.

الفصل الثالث فى كى الشقيقة¹ غير المزمنة²

إذا حدث فى شق الرأس وجع مع صداع وامتد الوجع الى العين فاستفرغ³ العليل بالادوية المنقية للرأس واستعمل سائر العلاج الذى ذكرت فى⁴ تقاسيم الامراض⁵ فإن لم⁶ ينجع ذلك⁷ فالكى فيها على وجهين ٥ إما الكى بالدواء الحادث المحرق وإما بالحديد ، فأما الكى بالدواء المحرق فهو أن تأخذ سناً واحداً من الثوم فتقشره وتقطع اطرافه من الجهتين ثم شق موضع الوجع من الصدغ بمبضع عريض حتى يصير فيه موضعاً تحت الجلد يسع فيه السن فيدخل⁸ فيه تحت الجلد حتى يغيب ثم شد عليه برفائد شداً محكماً وتتركه قدر⁹ خمس عشرة ساعة ثم حله وأخرج الثوم واترك الجرح يومين او ثلاثة ثم احمل عليه قطنه مغموسة ١٠ فى السمن حتى يقيح الموضع ثم تعالجه بالمرهم الى أن يبرأ إن شاء الله ، وإن شئت فعلت ذلك ببعض الادوية المحرقة التى آتيتها فى المقالة الثامنة عشر فى الادوية المحرقة ،

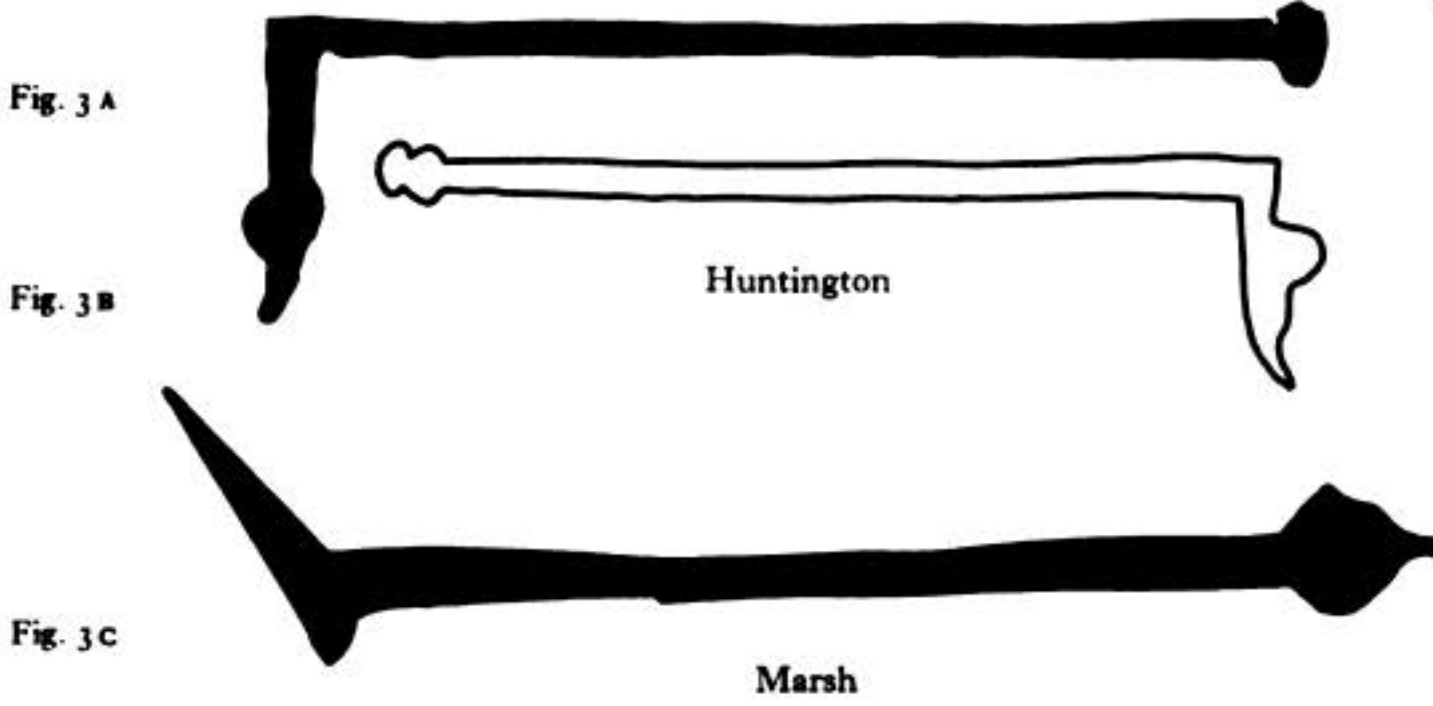
- AMP, تقاسم الامراض 3. H.M.V. واستفرغ 2. H. الغير المزمنة 1.
cett. ذلك كله 5. cett. ولم M, فلم BP, 4. HS. تقاسيم العلل
H.M.V. خمسة عشر, P خمس عشر, ABS. 7. cett. فتدخله 6.
ABHS الثانية 8.

The actual cauterization with iron should be done in this way: heat a cautery of this shape (fig. 3).² It is called the claviform; the head is nail-shaped in that there is a slight curvature with a small protuberance in the middle. Apply it then to the site of the pain, hold your hand steady and revolve it little by little. Let the thickness of skin burnt be about half; then remove your hand so as not to burn a subjacent artery, for thus a haemorrhage arises. Then soak some cotton wool in saline, apply to the place, and leave three days; then apply cotton wool with butter; then treat with ointment till it heals. Or if you prefer you can cauterize this migraine with the knife-edge that juts out from the cautery; but be careful not to cut an artery, specially in this kind of migraine that is non-chronic.

² (A) H; (B) also H, labelled 'Thus in the original manuscript from which this one is copied'; (C) M.

وأما كتيها بالحديد فعلى هذه الصفة: تحمى المكواة التى هذه

15 صورتها :



وتسمى المكواة المسماية لأن رأسها كهيئة المسمار فيها بعض التقبيب⁹
وفى وسطها نتوء صغير، ثم تضعها على موضع الوجع وتمسك يدك وانت
تدير الحديد قليلا قليلا¹⁰ ويكون القدر الذى تحرق من ثخن الجلد
مثل نصفه وترفع يدك لكيلا تحرق الشريان الذى من اسفل فيحدث
20 النزف، ثم تشرب قطنة فى ماء الملح وتضعها على الموضع وتتركه ثلاثة
أيام ثم تحمل القطنة بالسمن ثم تعالجه بالمرهم الى أن يبرأ إن شاء
الله، وإن شئت كويت هذه الشقيقة بالطرف¹¹ السكينى الثانى¹² من المكواة
وتحفظ من قطع الشريان فى هذه الشقيقة غير¹³ المزمنة خاصة¹³

9. BP, AMS, التعقب H, السعيد V.

10. A, السكينى الثانى H. 11. <ثم ترفع يدك بسرعة> ABPS, <بسرعة> 10.

12. H. الغير 13. om. P. P. السكسه الثانى B, الثانى السكينى

CHAPTER FOUR. On the cauterization of chronic migraine.

When you have treated a migraine in the way we have described and with what we have mentioned in the sections on diseases, and the treatment is ineffective, and you perceive that the malady is such that the cauterization we have mentioned before does not suffice for it, either with caustic or with the actual cautery, you should heat an edged cautery to white heat after you have marked the place with a line half a finger's breadth long or thereabouts; and impress your hand once and maintain the pressure till you cut down upon the artery and reach the bone. You must be careful of the mandibular joint which moves in chewing, that you do not cut the muscle or tendon that moves it, causing spasm. Have the utmost care of haemorrhage from the artery you have cut, for the occurrence of that is dangerous, specially with one who does not know what to do, having no experience or practice; it is better to refrain from operating. We shall later on mention a treatment for accidental haemorrhage of the artery, in due detail, in its proper place in this book. But if you see that this cautery is not enough for this disorder and you see that the patient is of bodily fitness for it, cauterize him in the middle of the head as we have described, and treat the wound till healed. If you prefer, employ that cauterization which we have described in the chapter on the extraction of an artery, with the cautery of two blades; for that is a cauterization better and more effective than this.

BOOK ONE. CHAPTER FOUR

See the note to chapter 32 on edged cauteries.

الفصل الرابع فى كى الشقيقة المزمنة

اذا عالجت الشقيقة بما ذكرنا من العلاج المتقدم وما ذكرنا فى تقاسيم الامراض فلم ينجع العلاج ورأيت من العلة ما لا يقوم بها ما ذكرنا من الكى الاول بالدواء او الكى¹ بالنار² فينبغى أن تحمى المكواة³ السكينية حتى تبيض بعد أن تعلم على موضع الوجع بخط طوله نصف اصبع او نحوه وتترك يدك مرة واحدة وانت تشدّها حتى تقطع الشريان وتبلغ نحو العظم الا أنه ينبغى لك أن تتحفظ من اتصال الفك الذى يتحرك عند المضغ فتحرق³ العضل³ او العصب المحرك له فيحدث التشنج ، وكن على حذر ورقبة⁴ من نزف دم الشريان الذى قطعت فإن فى قطعه الغرر ولا سيما لمن جهل⁵ ما يصنع ولم يكن دربا⁶ مجربا وترك العمل⁶ اولى ، وسيأتى ذكر تدبير النزف العارض من الشريان على وجهه فى⁷ موضعه من⁸ الكتاب إن شاء الله ، فإن رأيت من العلة ما لا تقوم به هذه الكية ورأيت جسم العليل محتملا فاكوه كية فى وسط الرأس كما وصفنا وعالج الجرح حتى يبرأ إن شاء الله ،¹⁵ وإن شئت استعملت الكى الذى ذكرنا فى باب سل الشريان بالمكواة ذات السكينين فإنه كى افضل من هذا وأنجع⁹

فيحرق H, لئلا تنقطع العضلة 3. om. V. 2. cett. بالكى 1. BM, MV, العمل به 6. B. لم يدر 5. A. فيه HS, وتقية 4. ABS. العضلة M. فى هذا AHV, من هذا 8. cett. وفى HP, 7. A. العمل به فيه 9. MPV, انجأ P² cett.

CHAPTER FIVE. On cauterization of pain in the ears.

When the ear gets a pain from the cold and is treated with laxatives and other medicine as mentioned in its section and the pain nevertheless persists, heat the cautery termed 'punctate' (fig. 4). Then after it has been heated prick with it in a circle right round the ear, or around both if there is pain in both, after the place has been marked with ink; the cauterizations being a little away from the ear. Let the cauterization be of ten punctures or thereabouts round each. Then dress the places till healed.

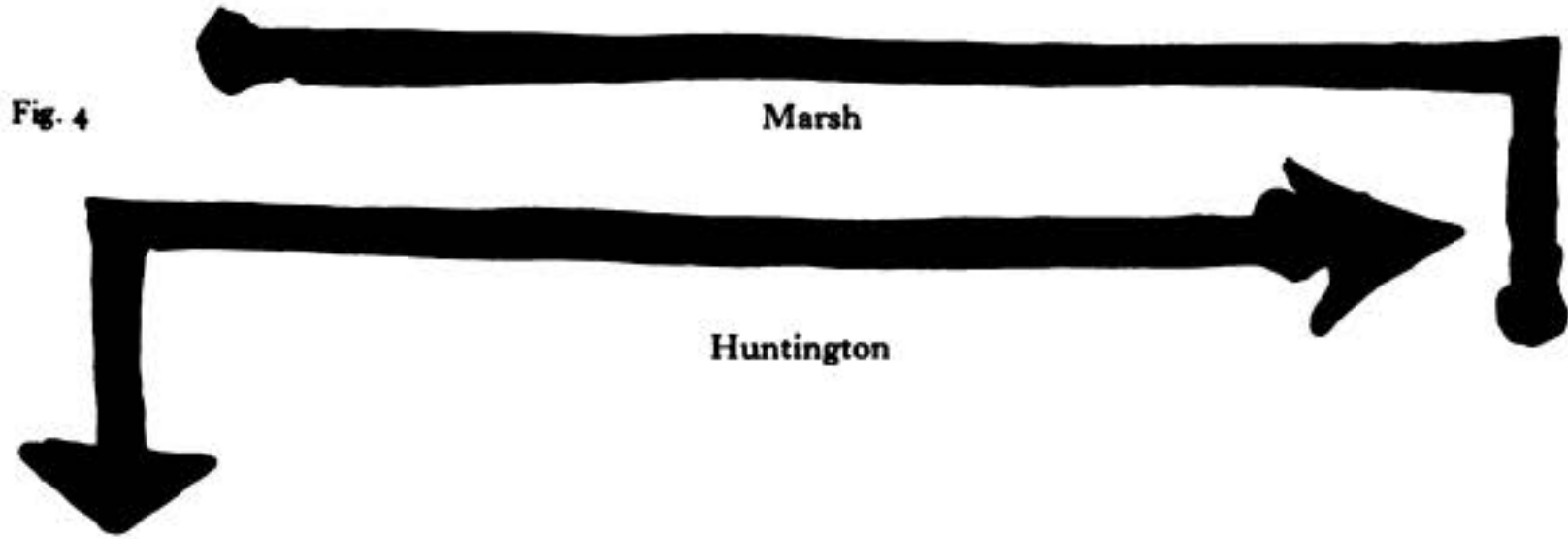
BOOK ONE. CHAPTER FIVE

This pointed cautery and its use in certain ear troubles seem to have been derived from Celsus, who speaks of rapidly passing a heated needle through the ear (vii. 8). The idea of the pointed cautery was perhaps the original one. Aetius quotes Archigenes, who wrote in the first century A.D., as saying that the Ancients used glowing roots of aristolochy as a remedy for sciatica. The actual illustration given in the two MSS. must differ considerably from the instrument

Celsus had in mind; neither could be described as a needle; and why is one end bent over at a right angle? Perhaps to allow a rotating boring movement to be imparted to the instrument while being applied to the skin. The punctate cautery is also given for chest complaints (chapter 24, fig. 19), liver abscess (28, fig. 27), pleurisy (29), diseases of the spleen (30), pain following a fall (46), and opening an abscess (51, fig. 38).

الفصل الخامس فى كى اوجاع الأذنين

إذا حدث فى الأذن وجع عن برد وعولج¹ بالمسهلات وسائر العلاج الذى ذكرنا فى التقسيم ولم يذهب الوجع فاحم المكواة التى² تسمى النقطة³ التى هذه صورتها :



5 ثم تنقط بها بعد إحماؤها حول الأذن كلها كما تدور أو حولهما جميعا إن كان الوجع فيهما ، وتبعد بالكى من أصل الأذن قليلا بعد أن تعلم الموضع⁴ بالمداد ويكون الكى قدر عشر نقط فى كل أذن أو نحوها ثم تعالج المواضع⁵ حتى يبرأ إن شاء الله،

1. عولج BP.
2. التى ABS. وهى
3. بالنقطة B.
4. المواضع AV.
5. المواضع ABHS.

CHAPTER SIX. Cauterization of the twisted mouth.

The twisting of the mouth which is curable with the cautery is of that nature which arises from phlegm, as we have already noticed in the sections on sicknesses. But cauterization is to be carefully avoided in that type which is due to dryness or spasm of the tendon. When this kind of deformity has been treated with electuaries, errhines, and gargles, and your treatment is ineffective, you should use three cauterizations: one at the root of the ear; the second a little below the temple; and the third at the junction of the lips. Let your cauterization be on the opposite side to the affected side, for the relaxation will arise in the side which seems normal. The form taken by the cauterization is that you burn him a little below the frontal prominence, on a level with the upper tip of the ear, and also on the temple the length of the thumb; carry the burning to a depth of about half the thickness of the skin. The shape of the cautery. It is a variety of the bladed cautery such as has already been described, but is rather more slender as you see (fig. 5). Its blade should have a certain thickness. Then dress the place with what we have mentioned till healed.

BOOK ONE. CHAPTER SIX

This knife-cautery, illustrated, is stated to be like that prescribed for the cure of migraine in chapter 4 only slenderer. This disorder, called 'cynic spasm', was described and pre-

scribed for by Celsus (iv, 2). We can only conjecture what the term meant; possibly it was Bell's Palsy. Chapter 18 also gives it, with a figure, for hare-lip.

الفصل السادس فى كى اللقوة

اللقوة التى تعالج بالكى انما تكون من النوع الذى يحدث من البلغم على ما ذكرت فى تقاسيم الامراض ويجتنب¹ كى النوع الذى يحدث من جفوف وتشنج العصب، متى عالجت هذا النوع من اللقوة بالايارجات⁵ والسعوطات والغراغر فلم² ينجع علاجك فينبغى أن يكوى العليل بثلاث كيات واحدة عند أصل الأذن والثانية أسفل قليلا³ من صدغه⁴ والثالثة عند مجتمع الشفتين واجعل كيك من ضد الجهة المريضة لأن الاسترخاء انما يحدث فى الجهة التى تظهر صحيحة، وصورة الكى أن تكويه كية بإزاء طرف الأذن الأعلى تحت قرن الرأس قليلا وأخرى فى الصدغ¹⁰ ويكون طولها على قدر طول الابهام تنزل⁴ بالكى يدك⁵ حتى تحرق قدر نصف ثخن الجلد، وهذه صورة المكواة وهى نوع من السكينية التى تقدمت صورتها إلا أنها ألطف منها قليلا كما ترى:

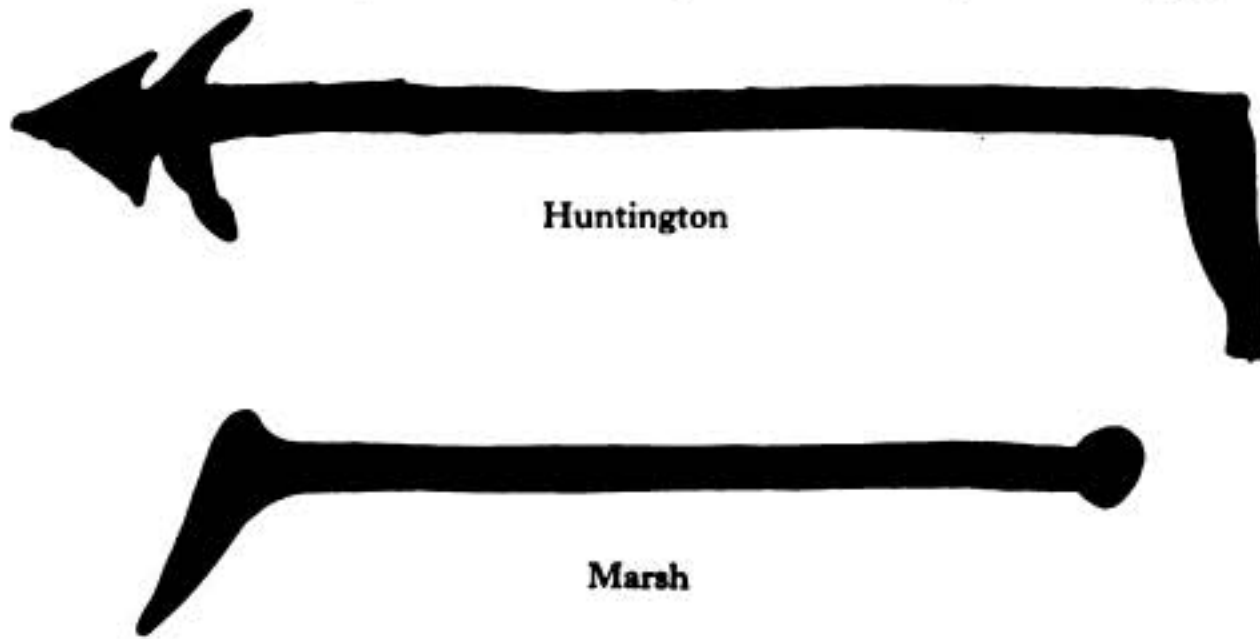


Fig. 5

وينبغى أن يكون السكين فيه فضل غلظ قليلا، ثم تعالج الموضع بما تقدم ذكره حتى يبرأ إن شاء الله،

S. تترك P, ثم تنزل 4. om. P. 3. M. ولم 2. ABV. وجنب 1.

5. om. HS.

CHAPTER SEVEN. On the cauterization of a chronic apoplexy.

When an apoplexy has lasted a long while and has been treated by those methods we have given and your treatment has been ineffective but the patient has no fever, then burn him with four cauterizations: one on each frontal prominence; one in the middle of his head as we have described; and one at the back of the head as has been said. The shape of the cauteries to be as before. He may also be given one burn over the cardia of the stomach; that will be more efficacious. Then treat as described.

BOOK ONE. CHAPTERS SEVEN TO NINE

For apoplexy, amnesia, and hemiplegia the use of either edged or olivary cauteries is proposed, both already given.

الفصل السابع فى كَى السكّة المزمنة

إذا أُرْزمت السكّة وعالجتها بما ذكرنا ولم ينجع علاجك ولم يكن بالعليل حتى فاكوه أربع كَيّات ، على كل قرن من رأسه كَيّة وكَيّة فى وسط الرأس كما ذكرنا وكَيّة فى مؤخر الرأس على ما تقدّم ، وصفة المكاوى على ما تقدّم ، وقد يكوى أيضا كَيّة على فم المعدة فيكون ابلغ ، ثمّ تعالج "بما تقدّم" ،

M. حتى يبرأ إن شاء الله . 1.

CHAPTER EIGHT. On cauterization for lethargy due to phlegm.

First, great electuaries should be given to the patient to drink; and pills to clear the head. Then let his whole head be shaved and apply a mustard plaster to the hinder part as described in the treatise on plasters. That should be applied several times as it is a kind of cauterization; do it in the very way described there. If he is cured, well and good; but if not, burn him with three cauterizations on the back of the head, arranging them in a row downward from the upper part of the head to the base of the neck; and make an interval between each pair of one finger's breadth. Then treat as aforesaid. If you wish to add to these cauterizations and the patient be fit to bear it, give him a burn in the middle; and if still more, then burn him on the two frontal prominences. Then dress till healed. Let the cautery be an olivary as described before.

الفصل الثامن فى كى النسيان الذى يكون من البلغم¹
ينبغى أن يسقى العليل أولا من² الايارجات الكبار³ والحبوب المنقية
للدماغ ثم يحلق⁴ رأسه كله⁴ وتحمل على مؤخره ضماد الخردل المكتوب
فى مقالة الاضمدة تحمله مرآت فإنه ضرب⁵ من الكى وافعل ذلك على
الرتبة بعينها التى ذكرتها هنالك⁶ فإن برى⁶ بذلك⁶ وآلا فاكوه ثلاث
كيات فى مؤخر رأسه تكون مصطفة من اعلى الرأس الى اسفل العنق
واجعل بين كل⁷ كية وكية⁷ غلظ اصبع ثم يعالج الكى بما تقدم ، فإن
اردت⁸ الزيادة وكان العليل محتملا لذلك فاكوه الكية الوسطى ، فإن
اردت⁸ الزيادة فاكوه على القرنين ثم تعالجه حتى يبرأ ، وتكون المكواة
¹⁰ زيتونية على الصورة التى تقدمت⁹

رأس 4.P. المحكمات 3. P²cett. 2. om. cett. 1. بلغم P. فانه برى بذلك وكثيرا تبرأ عنه العلة 6. M. يقرب 5. cett. العليل فان برى نعما فكثيرا مما تبرى هذه العلة بهذه B, بهذا العلاج فان برى بذلك فكثيرا ما تبرأ هذه العلة بهذا العلاج M, العلاجات زيتونى على مثال ما تقدم 9: 8. om. AP. 7. M. كيتين 7. V. M. صورتها ان شاء الله

CHAPTER NINE. On cauterization in palsy and flaccidity of the whole body.

Purgation of the head should come first, with electuaries and the other things we have mentioned. Then shave the patient's head; and then burn him with one cauterization in the middle of the head and one on either frontal prominence and one on the occiput, and three on the vertebrae of the neck. And if the malady of flaccidity of the body require still more and the patient be fit to bear it, and his disease be severe and have a strong hold on him, burn him with four more cauterizations on his dorsal vertebrae and carry the cautery to burn almost through the thickness of the skin; then remove your hand and treat him in the aforesaid manner till he is healed. Let the cautery be olivary.

الفصل التاسع فى كَى الفالج واسترخاء جميع البدن

ينبغى أن تتقدم فى تنقية الرأس بالايارجات وما ذكرنا ثم احلق
رأس العليل ثم اكوه كية فى وسط الرأس وكية على كل قرن من
الرأس وكية على مؤخره وثلاثا على فقارات العنق، فإن احتجت فى علة
استرخاء البدن الى أكثر من ذلك وكان المريض احتملا لذلك والمرض
قويا مستحكما فاكوه أربع كيات على فقارات ظهره وأبلغ بالكى حتى
تحرق من الجلد أكثره وترفع يدك ثم تعالجه على ما تقدم ذكره
حتى يبرأ إن شاء الله، وتكون المكواة زيتونية،

CHAPTER TEN. On cauterizing for epilepsy.

The epileptic who may be cauterized is he whose epilepsy arises from phlegm. When the patient is an adult and can stand taking the drugs, he should first purify his brain by great electuaries and the rest of the treatment mentioned in that section. But if it be a boy unable to tolerate the drugs he should employ gargles and medicaments to chew, to clear his brain, for several days beforehand, with an improvement in his diet. Then let his head be shaved and burn him with the single cauterization on the middle of the head in the manner described before, and with one cauterization on the occiput, and one on each frontal prominence; and, if the patient be fit and able to bear it, add those additional cauterizations on the cervical and dorsal vertebrae that we have already described for paralysis and for flaccidity. The cautery should be olivary, the shape before described. If the patient be a boy, use a fine cautery (fig. 6; H only).

الفصل العاشر فى كى الصرع

اتما "يكوى المصروع" الذى يكون صرعه من قبل البلغم، فينبغى أن ينقى دماغه أولا بالايارجات الكبار وسائر² العلاج الذى ذكرنا فى التقسيم اذا كان العليل كبيرا وكان محتملا لأخذ الادوية، فأما إن كان صبيا لا يحتمل الادوية فليستعمل الفراغر والمماضغ المنقية للدماغ قبل ذلك بأيام كثيرة مع تحسين³ اغذيته ثم يحلق رأسه⁴ ثم اكوه الكية الواحدة فى وسط الرأس على ما تقدم فى الصفة وكية أخرى فى مؤخره وعلى كل قرن من رأسه كية، فلن كان المريض قويا وكان محتملا فاكوه الكيات التى ذكرت فى صاحب الفالـج⁵ واسترخا⁶ البدن على فقارات العنق وفقارات الظهر، وتكون المكواة زيتونية⁷ على الصفة التى تقدمت،⁸ فلن كان العليل صبيا فاجعل المكواة لطيفة على⁹ هذه الصورة¹⁰؛

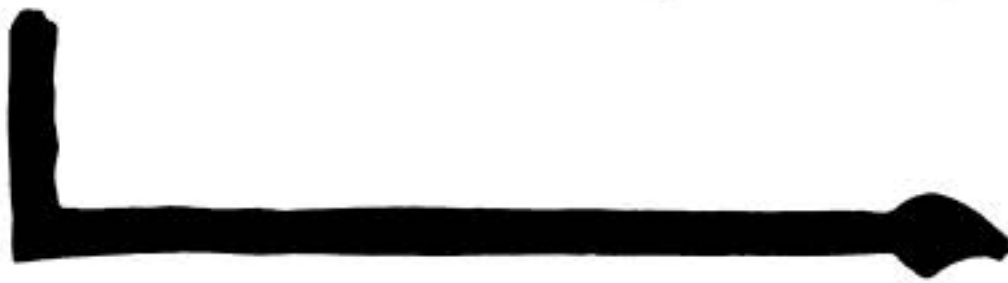


Fig. 6

Huntington

- MS, رأس العليل. 4. P. تحرى. 3. P. ولا سيما. 2. M. يكون للمصروع. 1. هذه الصورة يكتب من صورة. 6. 5. om. ABS. 7. العليل رأسه. 8. M. (fig. deest) الصورة الاولى بل تكون صغيرة, B. المكواة.

CHAPTER ELEVEN. On cauterization for melancholy.

When the cause of the melancholy be corrupt humours and a thick phlegm, burn him with those cauterizations mentioned in the case of the paralytic. If the cause of the melancholy be a redundance of humour turning to black bile, and the patient's body be humid, make him drink that which will purge his head as described in a previous section. Then shave the patient's head and apply a compact ring-bandage of linen and put it round the middle of his head. Have him sit cross-legged, held firmly on all sides. Then take a pound of stale sheep's butter and warm it on the fire to a moderate heat so that a finger put in can bear it; then pour it out on the middle of the head inside the circle of the bandage and leave it till it has cooled. Do this once a week with other efficacious treatment till he is cured. If you wish, burn him with multiple small puncture cauterizations; nor press long on the cautery but let this cauterization be only just punctured. For this kind of cauterization will moderately moisten the brain. Then let cotton soaked in butter or hen's grease be applied.

BOOK ONE. CHAPTERS ELEVEN TO THIRTEEN

In these three chapters the only specific shape mentioned is the punctate cautery for melancholy. The whole matter of this treatment for diseases of the head and eyes is a kind of overgrowth of the teaching of the later Greek writers.

الفصل الحادى عشر فى كَوِّ المالنخوليا¹

إذا كان سبب المالنخوليا رطوبات فاسدة² وبلغم غليظ³ فاكوه الكيآت
التى ذكرنا فى صاحب الفالج ، وإن كان سبب المالنخوليا فضل مائل
الى السوداء⁴ وكان جسم العليل مرطوبا⁵ فاسقه ما ينقى دماغه على ما
5 تقدم فى التقسيم ثم احلق رأس العليل ثم اصنع كعكة محكمة من
كان كالدايرة ثم أنزلها فى وسط رأسه والعليل قاعد متربعا يمسك من
كل جهة ثم خذ رطلا واحدا من سمن الغنم العتيق ثم سخنه على
النار سخونة معتدلة قدر ما يحتمل الاصبع اذا أدخل فيه ثم تفرغه
وسط رأسه فى الدائرة وتتركه حتى يبرد ، تفعل ذلك بالعليل كل
10 أسبوع مرة مع سائر تدبيره الجيد حتى يبرأ إن شاء الله ، وإن شئت
كوته تنقطا صغارا كثيرة من غير أن تمسك يدك بالمكواة بل يكون
تشميما فإن هذا النوع من الكوى يرطب الدماغ باعتدال ثم تحمل عليه
قطنة مشربة فى السمن او فى شحم الدجاج ،

1. P, ABHS, M, V المالنخوليا, H. وبلغما غليظا. 2.

3. B. لدنا رطبا.

CHAPTER TWELVE. On cautery in cataract of the eye.

When by those signs I have mentioned in the relevant section there is brought to your notice the beginning of a cataract of the eye, start with draughts for the patient such as shall cleanse his head; and guard him from all humidities. Make him also sweat for some days, fasting, in the bath. Then tell him to have his head shaved; and burn him with one cauterization in the middle of the head; then cauterize him with two burns on the temples if the cataract is beginning in both eyes; or on the one side only if it is in one eye. And with the cautery cut all the subcutaneous veins and arteries; and let the cauterizations be long, across the breadth of the temples. Beware of haemorrhage; if you see any, stanch it straight away with any means you can. We shall deal later on with the method of extraction and cutting out of arteries, and provision against haemorrhage. Two strong cauterizations are sometimes made on the back of the neck below the two bones.

الفصل الثانى عشر فى كَوْنِ الماءِ النازلِ فى العينِ

إذا تبَيَّنَ لك ابتداءُ الماءِ النازلِ فى العينِ بالعلاماتِ التى ذكرت
فى التقسيمِ فبادر فاسقِ العليلِ ما ينقى رأسه واحمه من جميعِ الرطوباتِ
وعرقه فى الحمامِ على الريقِ أَيْاماً ثم مره بحلقِ رأسه واكوه كَيْتةً فى
5 وسطِ الرأسِ ثم اكوه كَيْتتين على الصدغين إن كان ابتداءُ نزولِ الماءِ
فى العينين جميعاً أو من الجانبِ الواحدِ إن كان فى العينِ الواحدةِ
ثم اقطع بالمكواة جميعِ الاوردةِ والشرياناتِ التى تحت الجلدِ ولتكن
الكَيَّاتِ فيها طولِ فى عرضِ الصدغين وتحفظ من نزفِ الدمِ فإن
رأيت شيئاً منه فاقطعه على المقامِ بأى علاجٍ أمكنك وسنأتى بالحكمةِ
10 فى سَلِّ الشرياناتِ وقطعها والتحفظِ من النزفِ، وقد يكوى فى القفا
تحت العظمين² كَيْتتين بليغتين²،

1. MP, om. cett. 2. بليغين PS, om. B.

CHAPTER THIRTEEN. On cauterization of persistent lachrymation.

When tears are constantly in the eye and arise on account of the arteries and veins visible on the outside of the head, and you are sure that they are from cold thick phlegmatic superfluities, burn him with the very cautery that I taught for the beginning of cataract, namely, a cauterization in the middle of the head and two on the temples, and two on the back of the neck below the two bones; and, if you are compelled to add more, one cauterization on the side of the outer corner of each eye at the end of the eyebrow, with a small cautery.

الفصل الثالث عشر في كَيّ الدموع المزمنة

إذا كانت دموع العين مزمنة دائمة وكانت من قبل الأوردة
والشريانات التي في ظاهر الرأس من خارج الرأس وتيقنت أن ذلك
من فضول باردة غليظة¹ بلغمائية² فاكوه الكَيّ الذي وصفت بعينه في
5 ابتداء الماء النازل، كَيّة في وسط الرأس وكَيّتين³ على الصدغين وكَيّتين
في القفا تحت⁴ العظمين⁵ وإن احتجت إلى زيادة فاكوه كَيّة في كل
جانب من زنب العين على طرف الحاجب بمكواة صغيرة،

M. الفاس 5. V. على 4. P. وكية 3. AH. بلغمية 2. 1. om. BMV.

CHAPTER FOURTEEN. On cauterization for foetor of the nose.

When you have treated foetor by those methods given in its section and your treatment is unsuccessful, give the patient laxative draughts for three days; then shave his head; and burn with a median cauterization with the olivary cautery; then cauterize him twice above the eyebrows a little below the hair with a claviform cautery. Beware of cutting the artery. The figure of the claviform cautery (fig. 7).

BOOK ONE. CHAPTER FOURTEEN

Marsh is pretty certainly wrong in reading *minshāriya*—serrate—against *mismāriya*—bolt-shaped—of the other MSS., as the figures in the MSS., bear no resemblance to a saw and differ in no particular, it seems, from those showing the olivary cautery in earlier chapters. Nor is it possible to conjecture how a serrate cautery could be used in such a disorder as ozaena. The serrate

cautery is nowhere else mentioned by Albucasis, although it was well known to the Ancients; Caelius Aurelianus, for example, mentions it in his work on chronic disease (*Morb. Chron.* I, 11) as a remedy for disorders of the spleen. Celsus recognized the disease ozaena but recommended the vapours of resins for its cure.

الفصل الرابع عشر فى كى نتن الأنف

إذا عالجته بما ذكرنا فى التقسيم ولم ينجع العلاج فبادر فاسق
العليل القوقايا¹ ثلاث ليال ثم احلق رأسه واكوه الكية الوسطى بالمكواة
الزيتونية² ثم اكوه بالمكواة المسماية³ كيتين فوق الحاجبين تحت الشعر
قليلًا وتحفظ من⁴ الشريان لا تقطعه، وهذه صورة المسماية⁵:

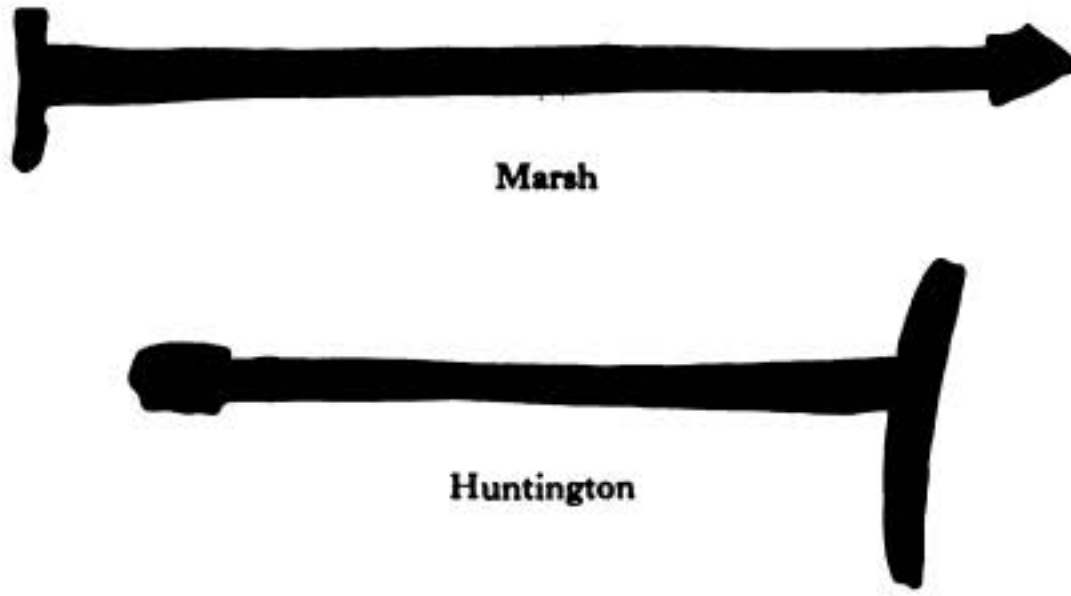


Fig. 7

1. القوقاي P. 2. المنشاريه M. 3. قطع P. 4. المنشاريه M,
B. المسماية يعمل هنا صورة المكواة

CHAPTER FIFTEEN. On cauterization for relaxation of the eyelid.

When an eyelid droops either from disease or humidity, then burn the lid with a single cauterization with this crescent-shaped cautery (fig. 8). And if you wish burn him also a little above the eyebrows with two cauterizations (; that is, one) on each side; but keep clear of the temples; and let each cauterization be of the length of the eyebrow. Nor let your hand apply the cautery longer than to burn a third of the way through the skin. The shape of the cautery (fig. 9).

BOOK ONE. CHAPTER FIFTEEN

Neither ptosis nor this method of cure found a place in the classical writings. The drawings of the crescentic cautery are clear and correspond well in both MSS. The first (fig. 8) has a burning end of small radius to fit the curve of the eyelid itself and give an even scar along its length. The second (fig. 9) has a crescentic end of wider radius for the eyebrow and to augment the contracture by a second scar.

الفصل الخامس عشر في كَيْ استرخاء جفن العين

إذا استرخى جفن العين عن مرض أو رطوبة فأكو الجفن كَيْة
واحدة بهذه المكواة الهلالية:



Fig. 8

وإن شئت فأكوه فوق الحاجبين قليلاً كَيْتين في كلّ جهة وتباعد من
الصدغين ويكون طول كلّ كَيْة على طول الحاجب ولا تتبالغ يدك بالكَيْ
بل على قدر ما يحترق ثلث الجلد ، وتكون صورة المكواة على هذه
الصفة:

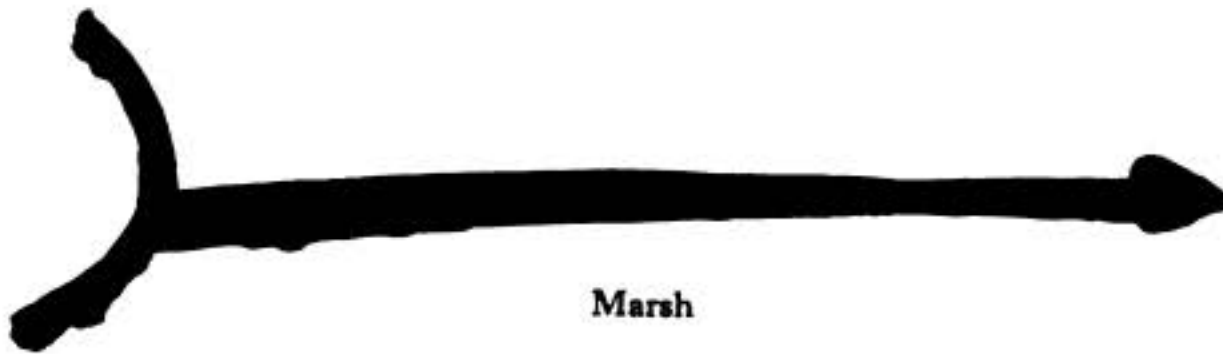


Fig. 9

CHAPTER SIXTEEN. On cauterization of the eyelid when the eyelashes are turned inwards, irritating the eye.

The cauterization is of two kinds, by fire and by caustic. Cauterization by fire will be thus: tell the patient previously, if he is one of those who pluck the lashes, to let them grow till they are long and straight; and if during growth they irritate him, bind the eyes with a fillet so as not to move till they have grown. When they have grown and are straight, put the patient's head in your lap and mark upon the eyelid with ink the shape of a myrtle leaf, beginning near the lashes. Then apply cotton wool soaked in egg-white or mucilage of psyllium seeds. Then heat a cautery of this form (fig. 10). Then burn over the shape marked out, slowly, with many small strokes, till the whole surface of the skin marked out to the shape of the myrtle leaf be cauterized, specially the outer part of it. It will show the correctness of your work if you see the eyelid contracted and the lashes risen away from the white of the eye. Then remove your hand and let him be for three days. Then apply cotton wool soaked in butter till the scab falls off; then treat the place with ointment till healed. But if after an interval there be a return of the same condition of the eyelash and of drooping of the eyelid, repeat the cauterization in the same place just as you did before.

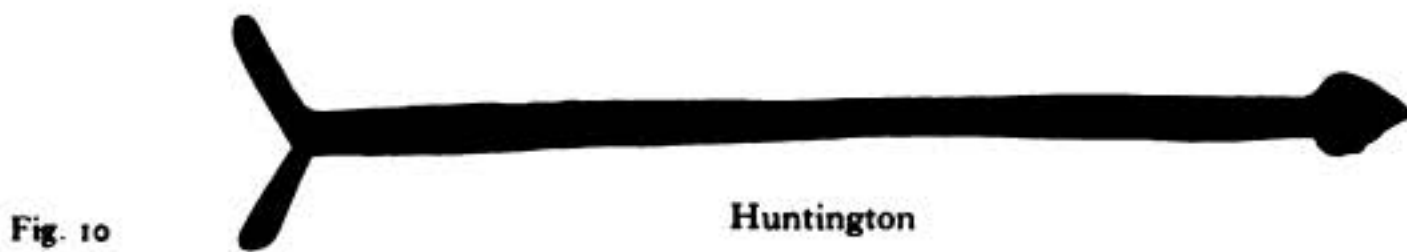
BOOK ONE. CHAPTER SIXTEEN

Entropion, with the associated condition of trichiasis, was given a long paragraph by Celsus (VII. 7), who recommends the use of the cautery, but the punctate or needle variety. Later writers also refer to this; among them, Aetius originated the application of caustic (VII. 71 and 72) which was later copied by Paulus Aegineta (VI. 8) and by Albucasis in this chapter. The application of the actual cautery in the manner we find here is evidently a technique peculiar to the Arabs. The two MSS., however, differ a good deal in the figures of the cautery used for

this. The text makes it clear that it was crescentic or lunate. The apparent difference in the figures may therefore be explained by that in the Marsh MS. being an oblique view of that which the Huntington MS. shows from a full lateral aspect. The crescentic form is, as in the last chapter, to fit the curve of the eyelid; but it seems to have been used in a different way: a definite area is marked out and cauterized over with many small strokes. Figure 11 indicates the form which this cauterized area was to take.

الفصل السادس عشر في كَيّ جفن العين اذا انقلبت اشغارها الى داخل¹ فنخست العين

فالكَيّ فيها على نوعين إمّا الكَيّ بالنار وإمّا الكَيّ بالدواء المحرق،
فأما كَيّها بالنار فتأمر العليل قبل ذلك أن يترك اشغاره إن كان ممن
5 ينتفها حتى تطول وتستوى فإن نخسته عند نباتها فتشدّ عينه² بعصاة
لئلا تتحرك حتى تنبت فإذا نبتت واستوت فضع رأس العليل في
حجر ثم تعلّم على جفن العين بالمداد علامة على شكل ورقة آس
ويكون ابتداء العلامة بالقرب من الاشغار ثم تضع³ تحت الجفن⁴ قطننة
مشربة في بياض البيض او في لعاب البزقطينا⁴ ثم تحمى مكواة هذه
10 صورتها :



ثم تكوى على الشكل الذي علّمت قليلا قليلا في مرّات كثيرة حتى
يحترق سطح الجلد الذي هو كشكل ورقة الآس كلّ ظاهره خاصّة
وعلاوة صحّة عملك أن ترى جفن العين قد تشمّر والشعر قد ارتفع
عن لحمة العين فارفع يدك حينئذ واتركه ثلاثة أيام، ثم احمل عليه
15 قطننة بالسمن حتى تنقلع الخشكريشة ثم عالجه بالمرهم حتى يبرأ إن
شاء الله، فإن عاد شيء من الشعر بعد وقت واسترخى الجفن
فأعد الكَيّ على ذلك الموضع كما فعلت أولا، فإن كان الشعر في

1. <على العين> BM. 2. عينه BS. 3. P, om. cett. 4. <على العين> P, cett.

And if it be in the lower lid cauterize this also till it falls back to its normal position and the hairs do not irritate the eye.

This is the method of burning with caustic: bid the patient let the lashes grow long and straight; then make the shape of a myrtle leaf out of paper. Then take of common soap and of quicklime of each the weight of a drachm or thereabouts and beat them well together rapidly¹ lest the mass get cold; then spread this on the paper shaped like a myrtle leaf and apply to the eyelid of one or both eyes; place also under the eye cotton wool soaked in egg-white; the patient's head being in your lap. Place your forefinger on the caustic and press it down a little and move it about according as the patient feels the bite of the caustic; for he will feel it sting like fire. While the stinging lasts, let the caustic remain on and move it about with your finger; and when the stinging dies down take away the caustic and wash the eye with water; then look, and if you see the eyelid raised up as by a blepharoplasty, either by fire or by incision, good. If not, repeat the caustic application in the place that the drug has not affected and which has not gone black, until your operation is complete and the eyelid draws together.

¹ M adds 'and knead with lye of oak and lye of fig-wood or with the urine of a boy not yet arrived at puberty'.

الجفن الأسفل فأكوه حتى يرجع الى موضعه الطبيعي⁵ ولا ينخس الشعر العين،

20 وأما الكي بالدواء المحرق فهو أن تأمر العليل أن يترك الأشفار حتى تطول وتستوى ثم تصنع من الكاغد صورة ورقة آس ثم خذ من الصابون المعهود ومن "الجير غير المطفأ"⁷ من كل واحد وزن درهم او نحوه فتسحقهما جميعا سحقا جيدا⁸ وتفعل ذلك بالعجلة لئلا يجف ثم تبسط منه على الكاغد الذي صنعت كهيئة ورقة الآس وتضعه على 25 جفن العين الواحدة او الاثنتين وتضع تحت العين قطنة مشربة في بياض البيض ورأس العليل في حرك وتضع اصبعك السبابة فوق الدواء وتزمه قليلا وأنت تحركه كلما حس العليل بلذع الدواء لأنه يجد له لذعا كالنار فما دام يجد اللذع فاترك الدواء وحركه باصبعك فإذا سكن اللذع فانزع الدواء واغسل العين بالما وانظر فإن رأيت 30 الجفن قد ارتفع كما يرتفع عند التشمير بالنار او بالقطع¹⁰ فأعد عليه من الدواء على الموضع الذي لم يؤثر فيه الدواء¹¹ ولم يسود¹² حتى

الحسن او الصابون غير مصفا 7. P. الكمون 6. BHMS. <ويستوى> 5. <ويعجن بما رماد البلوط وبما رماد التين او عجن ببول صبي 8. P. فضع عليه الدواء ثانيا وان 10. cett. يبرد 9. P. M. لم يبلغ الحلم B, om. cett. ولم يستو 11. APV. M. استو علك وتشمر الجفن فضع

Then apply cotton wool with butter till the crust of the burn falls away; then treat with Palm ointment¹ or the like till it be healed.

But in your operative procedure take the utmost care lest the least bit of caustic get into the eye. And if, after some days, the eyelid be relaxed and some eyelash irritate the eye, then repeat the application, particularly in that part of the lid that has dropped, in the same manner as before; and treat till cured. This is the shape of the myrtle leaf (fig. 11). You should know that the human eye varies in size; so let your contracture be in proportion to this. The right procedure is well known to him who has experience in this art.

¹ See Hamarneh and Sonnedecker, *op. cit.*, p. 76.

تستوفى¹² عملك وتتشمّر العين ثمّ تضع¹⁰ عليه القطن بالسمن حتّى تنقلع
 (جلبة الحرق¹³) ثمّ تعالجه بالمرهم النخلّى او غيره حتّى يبرأ،
 وينبغي لك عند العمل أن تتحفّظ غاية التحفّظ أن لا يسقط فى
 35 العين من الدواء شىء فإن استرخى الجفن بعد ايام ونخش من
 الشعر شىء فى العين فأعد الدواء على ذلك الموضع الذى استرخى
 من الجفن خاصّة كما فعلت أولاً ثمّ عالجه حتّى يبرأ، وهذه صورة
 ورقة الآس:



Huntington



Marsh

واعلم أنّ أعين الناس قد تختلف فى الصغر والكبر فعلى حسب
 40 ذلك فليكن تشميرك، وليس بخفى طريق الصواب على من كانت له
 دربة بهذه الصناعة،

12. A, cett. يستوى. 13. HP¹SV, المحروق, P²الجلد A, حلية الحرق, BM. حلدة الحرق.

CHAPTER SEVENTEEN. On cauterization of a fistula in the angle of the eye.

When you have treated a fistula in those ways mentioned in the sections on diseases, without success, it should be cauterized after this manner. Bid the patient put his head in your lap; and let an assistant hold his head in front of you without moving or stirring. Then place on his eyes cotton wool damped with egg-white or mucilage of psyllium seeds. Then heat a cautery shaped thus (fig. 12). It should be hollow and in shape like a fine tube, like an eagle's quill, at the one end that is used as a cautery. And if you wish it may be perforated to the other extremity; or it can be solid like a probe. But this hollow instrument will be better for your operation. Then press on the fistula if it be open and get the matter out of it and wipe it away; or if it is not open, then open it. Then apply to it the cautery, which should be very hot, and press it in with your hand till it reaches the bone. While you are burning keep the hand away from the eye slightly toward the nasal side, lest your hand slip or the patient draw away so that you put the cautery into the ball of the eye and destroy it. And if you reach the bone

BOOK ONE. CHAPTER SEVENTEEN

Celsus, in his excellent chapter (VII. 7) on diseases of the eye, pays attention to lachrymal fistula, or *aegilops* as the Greeks called it; and proposed cauterization down to the bone. Paulus too gives a chapter (VI, 22) to the same and speaks of a perforator to be used, it seems, after cauterization. Albucasis appears to be the first to put forward a special cautery for curing this disorder. The Huntington figure agrees well with the text (fig. 12) and indicates an instrument somewhat resembling a cork-borer; the fistula was

followed along with this hollow tube cautery and an opening was thus bored out. He goes on to say that if the fistula is not cured by this simple operation, it will have to be opened into the nose. An alternative measure involved the use of funnels for pouring molten lead into the fistula; these are shown in figure 15. Albucasis acknowledges the authority of the Ancients for this treatment; it seems to have originated with Archigenes who is quoted by Galen (*De Comp. Medicament. Sec. Loc. v*).

الفصل السابع عشر في كتي الناصور الذي يعرض في مأق العين
 اذا عالجت الناصور بما ذكرنا في تقاسيم الأمراض فلم ينجع
 علاجك فينبغي أن يكوى على هذه الصفة، تأمر العليل أن يضع رأسه
 في حجرك ويمسك رأسه خادماً بين يديك إمساكاً لا يتحرك ولا يضطرب¹⁾
 5 برأسه²⁾ ثم تضع قطنة مبلولة في بياض البيض او في لعاب البرزقون
 على عينيه ثم تحمى المكواة التي هذه صورتها⁴⁾:



Marsh



Huntington

Fig. 12

تكون مجوفة كهيئة انبوبة³⁾ ريش النسر من الطرف الواحد الذي يكون⁶⁾
 به الكتي وإن شئت أن تكون منفوذة⁷⁾ الطرف الآخر وإن شئت كانت
 مصمتة كالمرود إلا أن هذه المجوفة أفضل لعملك إن شاء الله، ثم
 10 تعصر الناصور إن كان مفتوحاً وتخرج منه المدة وتنشفه او كان غير
 مفتوح فتفتحه وتستخرج قيحه ثم تضع حينئذ عليه المكواة وهي حامية
 جداً فتمسك بها يدك حتى تصل الى العظم وأبعد يدك قليلاً عند
 الكتي من العين الى ناحية الانف لئلا تخطئ يدك او يقلق العليل
 فتقع المكواة في شحمة العين فتفسدها، فإن وصلت في أول كية⁸⁾

[deest haec sectio in codice S] 1. om. M. 2. لئلا AH.

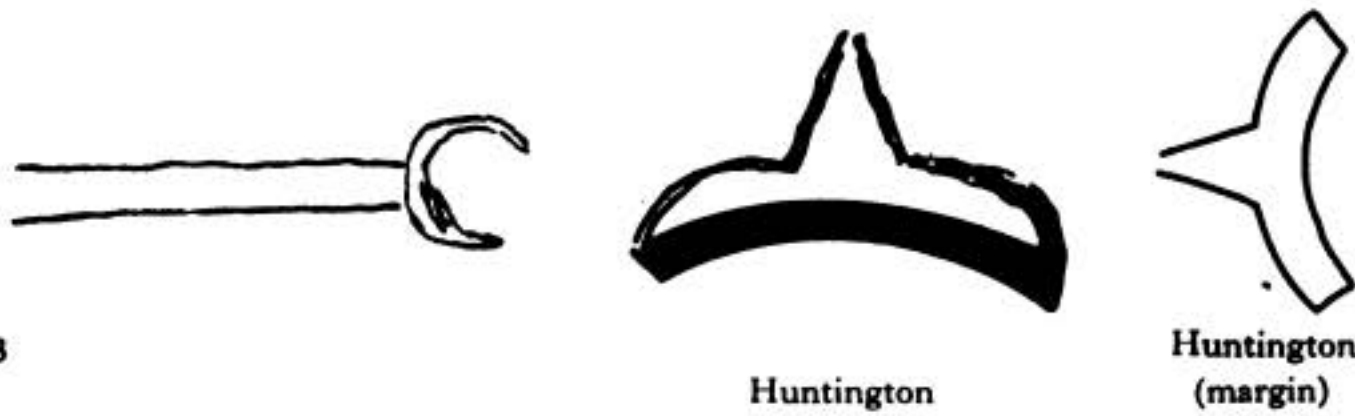
3. رأسه V, om. M. 4. صفتها BP. 5. انبوب ABHV, om. M.

6. codd. an leg. ? يكوى 7. A, الى V, منفوذة الى BM,

8. M, كتيك cett. HP. منفردة

at the first cauterization, good; if not, repeat the cauterization if necessary. Leave it a few days, then put on cotton wool with butter and treat with hygroscopic ointment till it heals. And should forty days have passed and it does not heal, apply a sharp corrosive ointment so as to expose the bone, and strip it as will be explained in the appropriate chapter. Another method of cauterizing a fistula is that which some of the Ancients mentioned: apply yourself to the site of the fistula and incise it; then insert into the incision a fine funnel, this being the figure of it (fig. 13), and pour into it a drachm of molten lead; and keep your hand on the funnel, holding it firm all the time, and do not let the patient move at all, lest the molten lead run into his eyes. Then you should put cotton wool soaked in egg-white or water upon the patient's eye. For the lead cauterizes the site of the fistula and acts as a marvellous cure. If the fistula heals by the cauterization and medication we have described, well and good; otherwise perforation of the nose will undoubtedly have to be undertaken to lead the fistula into the meatus of the nose, by the technique that will come in its own place.

١٥ الى العظم والّا فأعد المكواة مرّة ثانية إن احتجت الى ذلك واتركه ثلاثة
أيام ثمّ احمل عليه^٩ قطنه بالسمن^{١٠} وعالجه بالمرهم المجفف حتى يبرأ ،
فلن^{١٠} مضى له^{١٠} أربعون يوما ولم يبرأ فاحمل عليه الدواء الحادث الأكال
حتى ينكشف العظم واجرده على ما سيأتى ذكره فى بابہ إن شاء
الله ، ووجه آخر من كفى الناصور ذكره بعض الاوائل ، تعدد الى
٢٠ موضع الناصور تشقّه ثمّ تضع فى نفس الشق قمعا رقيقا هذه صورته :



وتصبّ فيه^{١١} قدر وزن^{١١} درهم رصاصا مذابا وتمسك يدك بالقمع إمساكا
جيّدا مزموما^{١٢} ولا يتحرك العليل البتّة لئلا يسيل الرصاص العذاب الى
عينه^{١٣} وينبغي أن تضع على عين العليل قطنه مبلولة^{١٤} فى بياض البيض او
فى الماء فإنّ الرصاص يحرق موضع الناصور ويبرئه برّا عجيبا ، فلن
٢٥ برئى الناصور بما ذكرنا من الكى والعلاج^{١٥} والّا^{١٦} فلا بدّ من^{١٦} استعمال
ثقب الأنف وردّ الناصور الى مجرى الأنف على ما سيأتى فى موضعه
الأخصّ به ،

M. مرعليه. ١٠. M. السمن والقطن ٩.

عينه ١٣. BP, H. مرتوما ١٢. H. ZH, M. قدر, BV, قدر ZH, AP. ١١.

P. فابدا ١٦. B. <فحسن>. ١٥. cett. مغموسة, P. ١٤. cett.

CHAPTER EIGHTEEN. On cauterization of hare lip.

There often occur fissures in the lip to which are given the name 'hairs'; they are particularly common in the lips of boys. When you have ineffectually treated these clefts with those things that we have mentioned in their section, then heat a small edged cautery of this shape (fig. 14). The hollow should be as sharp as a knife. Then quickly place it, hot, right on the fissure till the burning has reached the depth of the lip. Then treat with wax plaster till healed.

BOOK ONE. CHAPTER EIGHTEEN

Albucasis is independent of the ancient writers in recommending cauterization for hare-lip. The edged cautery has already been put forward by him for migraine, 'cynic spasm', and epilepsy (chapters 4, 6, and 7) but without any illustration. The iron now shown seems, from the Marsh figure, to be a simple iron with an edged extremity at right angles to the shaft; but the Huntington sketch is hard to understand. The curved end might well be sharpened to an edge; but what were the cross-pieces? Perhaps they were some sort of guard to prevent the iron going too deep and at the same time they might retain heat in a very slender instrument

liable to rapid cooling. An enlarged model of this edged cautery is shown in chapter 32 for dropsy of the legs. It is justifiable to think that in both circumstances the edge was the important thing—in hare-lip for freshening the new edges to be brought together; in dropsy for making an opening to allow the fluid to drain away by gravity. The cutting cautery is an old device; Galen says (*Isagoge*, chap. 19) that some deal with cancer of the breast by the knife-cautery—*ξυράφιον*; and Paulus Aegineta, on hydrocele, says that the sword-cautery was the modern treatment.

الفصل الثامن عشر في كَيْ شقاق الشفة

كثيرا ما يحدث شقاق في الشفة يسمّى الشعرة ولا سيّما في شفاه الصبيان فإنّه كثيرا ما يحدث ، اذا عالجت هذا الشقاق بما ذكرنا في التقسيم فلم ينجع العلاج فأحم مكواة صغيرة سكينيّة على هذه الصورة :

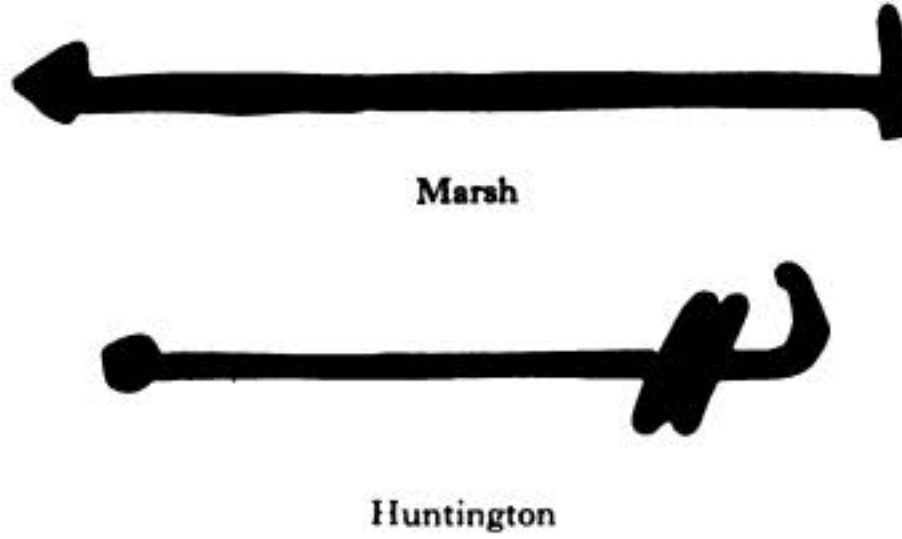


Fig. 14

يكون جوفها على رقّة السكين ثمّ تضعها حامية بالعجلة في نفس الشقاق حتّى يصل الكيّ الى عمق الشقاق ثمّ تعالجه بالقيروطي حتّى يبرأ إن شاء الله

[deest haec sectio in codice S] 1.AMV, B, اذا P, فانه اذا 2. H. فانا B. >وتكون المكواه لطيفه على هذه الصورة<.

CHAPTER NINETEEN. On the cauterization of fistulae occurring in the mouth.

When there comes a tumour in the base of the gums or in the palate or in the roots of the molar teeth, and it becomes purulent and breaks out and a fistula comes from the flow of pus, and you have treated this without effect, you should heat a cautery of a size to fit the fistula; then introduce it hot into the fistula opening; and continue the pressure with it hot until the iron, still hot, reaches the hollow and the extremity of it. Do this once or twice over. Then afterwards treat as we have mentioned until it heals. If the matter stops and it heals, well and good; otherwise it is impossible to avoid opening up the place and removing the diseased bone in the manner we shall speak of in its proper chapter.

BOOK ONE. CHAPTER NINETEEN

The operation here seems to involve the use of the probe-cautery; but it is not named or figured. See note to chapter 28.

الفصل التاسع عشر في كَيّ الناصور الحادث في الفم

إذا عرض في أصل اللثا أو في الحنك أو في أصول الأضراس
ورم ثم قاح وانفجر "وصار من جرى القيح" ناصور ثم عالجت فلم ينجع
فيه العلاج فينبغي أن تحمي مكواة على قدر ما يسع في الناصور ثم
5 تدخلها حامية في ثقب الناصور وتمسك يدك حتى تصل الحديدة
محمية إلى غوره وآخره وتفعل ذلك مرة أو مرتين ثم تعالجه بعد
ذلك بما ذكرنا من العلاج إلى أن يبرأ إن شاء الله، فإن انقطعت
المادة وبرئ ولا فلا بد من الكشف على المكان وينزع العظم الفاسد
على حسب ما سيأتي في بابه إن شاء الله،

وازمين B, وازمين جرى القيح منه AV, وازمين وجرى القيح وصار I.P,
H. ولذم القيح M, جرا منه القيح S, جرى القيح وصار

CHAPTER TWENTY. On cauterization of teeth and of relaxed gums.

When the gums are relaxed on account of humidity and the teeth are loose, and you treat this with drugs, and your treatment is ineffectual, then place the patient's head in your lap; then heat the cautery whose picture will come later. Put a cannula upon his tooth and quickly introduce the glowing cautery into it and press a little until the patient can feel the heat of the fire reaching the root of the tooth; then remove your hand. Then repeat the cauterization as many times as you may desire. Then the patient should fill his mouth with saline, hold it for a while, then spit it out. Then the loose tooth will be made firm, the relaxed gum will be tightened, and the corrupt humidity will be dried up.

BOOK ONE. CHAPTERS TWENTY,
TWENTY-ONE

The use of a cautery passed through a cannula to protect neighbouring tissues seems to have been well known to the Ancients. In the pseudo-Hippocratic treatise on haemorrhoids an alternative is the application of a 'tube-like cautery'—*καυστήρ οἷος καλαμίσκος φραγμίτης*—(protected by a tube (or reed)) through which a well-fitting iron was then to be passed (*De Haem.*, para. vi). In another pseudo-Hippocratic work (*De Affectionibus*, para. xxxiv) the operator dealing with nasal polypi is bidden introduce a tube (*σῦριγξ*) into the nose and cauterize with three or four irons. This is repeated by Celsus (VII. 11) who says the tube may be *vel fictilem fistulam vel . . . scriptorium calamum*—either a porcelain tube or a reed.

The instruments described by Albucasis for an operation on the same lines but for teeth are, first, fig. 15, a pointed head of solid heavy design on a common type of cautery shaft. The Marsh drawing shows an additional feature in about the middle of the shaft which may depict some sort of packing or expansion to give an exact fit to the bore of the tube, thus according well with the directions for the Hippocratic operation for piles noticed above. Secondly in figure 16 he shows a plain straight tube to be made of metal, either bronze or iron, unlike that of Celsus; the Huntington drawing shows also the manner of its use, the cautery actually passing through it.

الفصل العشرون¹ فى كَيّ الاضراس والثلاث المسترخية

اذا استرخت الثلاث من قبل الرطوبة وتحركت الاضراس وعالجتها
بالادوية ولم تنجع فضع رأس العليل فى حجرك ثم احم المكواة
التي تأتى صورتها بعد هذا² بعد أن² تضع الانبوبة على الضرس
وتدخل فيها المكواة حامية بالعجلة وتمسك يدك قليلا حتى يحس
العليل بحرارة النار قد وصلت الى أصل الضرس ثم ترفع يدك ثم
تعيد المكواة مرّات على حسب ما تريد ثم يملأ العليل فمه من ماء
الملح ويمسكه ساعة ويقذف به فإنّ الضرس المتحركة تثبت واللثة
المسترخية تشتدّ وتجفّ الرطوبة الفاسدة³

1. > وهذه صورة 3. cett. بان M, ان V, 2. B. الموفى عشرون 1.
(sed deest fig.) P. الحديد<

CHAPTER TWENTY-ONE. On cauterization for toothache.

When the toothache arises on account of cold, or if there be a worm in the tooth, and medical treatment does not avail, then cauterization should be undertaken. There are two ways of doing this, one with butter, the other with the cautery. Cauterization with butter is done thus: take cows' butter and let it boil in an iron ladle or pan; then take cotton wool, wind it round the top of a probe, and dip it in the boiling butter and quickly apply it to the aching tooth and hold it there till cold. Repeat this a number of times till the power of the fire reaches the root of the tooth. If you prefer, dip wool or cotton in cold butter and put it on the aching tooth, then on top of that apply the hot iron until the heat of the fire reaches the root of the tooth.

The actual cautery is administered thus: take a tube of bronze or iron with some thickness in the body of it so that the intensity of the fire does not reach the patient's mouth. Then heat a cautery whose figure will be given shortly, and apply it to the tooth itself and hold your hand until the cautery gets cold. Do this several times over; the pain will certainly depart the same day or the next. After this cauterization the patient is to fill his mouth with good butter and keep it in for a while, then spit it out. This is

الفصل الحادى والعشرون فى كى وجع الضرس

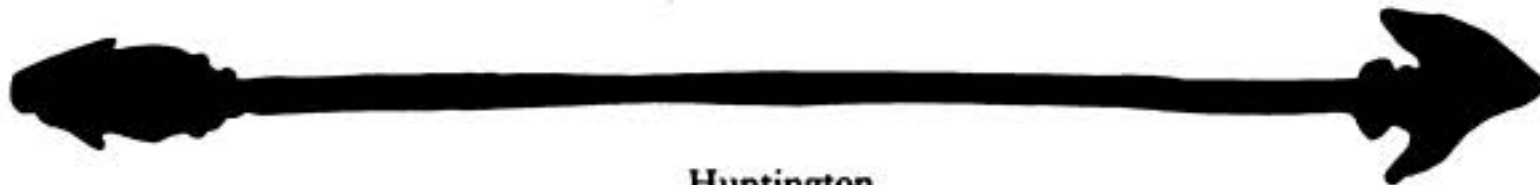
اذا كان وجع الضرس من قبل البرد او كان فيها دود ولم ينجع فيه "العلاج بالأدوية" فالكى فيها على وجهين إما الكى بالسمن وإما الكى بالنار، أما الكى بالسمن فهو أن تأخذ السمن البقرى فتغليه فى مغرفة حديد او فى صدفة ثم تأخذ قطنة فتلقها على طرف المرود ثم تغمسها فى السمن المغلى² وتضعها على السن الوجعة بالعجلة وتمسكها حتى تبرد ثم تعيدها مرات حتى تصل قوة النار الى أصل الضرس، وإن شئت أن تغمس صوفة او قطنة فى السمن البارد وتضعها على السن الوجعة وتجعل فوقها الحديد المحمية حتى تصل النار الى قعر السن،

وأما كىها بالنار فهو أن تعد الى أنبوبة نحاس او أنبوبة حديد ويكون فى جرمها بعض الغلظ لئلا يصل حر النار الى فم العليل، ثم احم المكواة التى تأتى صورتها وتضعها على نفس السن وتمسك يدك حتى تبرد المكواة تفعل ذلك مرات فإن الوجع يذهب إما ذلك النهار بعينه وإما يوما آخر، وينبغى فى إثر ذلك الكى أن يملأ العليل فمه بالسمن الطيب ويمسكه ساعة ثم يقذف به، وهذه صورة المكواة:



Marsh

Fig. 15



Huntington

1. P, العلاج بالدوا M, العلاج بالأدوية B, cett. 2. om. HS.

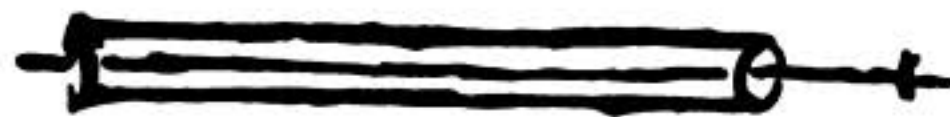
the figure of the cautery (fig. 15). Cauterize with whichever end you prefer according to circumstances. This is the figure of the tube (fig. 16).¹

¹ The scribe of H adds here, in the margin, 'Our master Latîf—may his glory and success continue—directed that the cautery be shown in red ink in the picture of the tube. He said in his copy from which this copy has been made: "Even though the manner of the operation is not so in the original, it will be of lasting advantage for facilitating the work and for purposes of tuition".'

تکوی باقی طرف شئت علی الحسب الذی یکن، وهذه صورة
الأنبوبة:



Marsh



Huntington

Fig. 16

CHAPTER TWENTY-TWO. On cauterization of scrofulous tumours.

When the tumours arise from phlegm and cold humidities and are not to be dispersed with medicines and you wish for a rapid dispersal, then heat the hollow cautery of which this is the figure (fig. 17). It is open at both ends to give exit for the fumes of burning from the other end. Place it hot, right on the tumour, once, or twice if need be, till you reach the bottom of the tumour. If the tumour be small, suit the cautery to the size of the tumour. Then let be for three days and apply cotton wool soaked in butter until the eschar has disappeared. Then treat with ointments and with plugs of lint till healed. [Cauterize at whichever end you prefer according to circumstances. This is the figure of the tube (fig. 18)].¹

¹ These last two sentences and the figure are not in B and do not appear in the Cremona Latin, while M has the figure with no caption. As no mention has been made of the use of the tube in this operation they are probably best omitted.

BOOK ONE. CHAPTER TWENTY-TWO

The instruments recommended in this chapter on the cauterization of scrofulous tumours are the same in principle as those in the last chapters. The iron itself, illustrated only in the Huntington MS., is not out of the ordinary, except in being slender so as to pass

through the cannula. The tube also resembles that in the preceding chapter, only being more neatly finished with a rolled edge, according to the Marsh figure. The treatment was apparently not given attention by the ancient authors.

الفصل الثانى والعشرون فى كى الخنازير

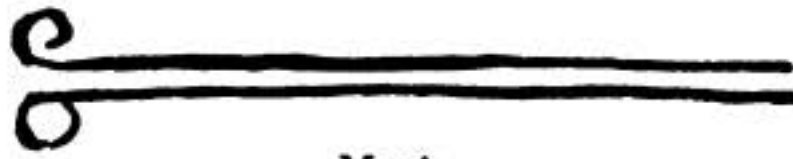
إذا كانت الخنازير عن البلغم والرطوبات الباردة ولم تكن تنقاد للنضج بالأدوية وأردت نضجا سريعا فأحم المكواة المجوفة التى هذه صورتها :



Fig. 17

Huntington

5 منفذة الطرفين ليخرج الدخان عند الكى من الطرف الآخر وضعها محمية على نفس الورم مرة ثانية إن احتجت الى ذلك حتى تصل الى عمق الورم فلن كان الورم صغيرا فاجعل المكواة على قدر الورم ثم اتركه ثلاثة ايام واحمل عليه قطنه مغموسة فى السمن حتى يذهب ما احترق بالنار ثم عالجه بالمرهم والفتائل حتى يبرأ إن شاء الله ،^{2,1}



Marsh

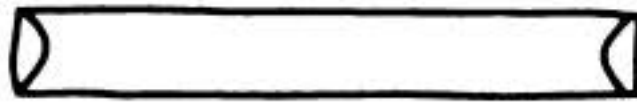


Fig. 18

Huntington

1. BM, <et fig.cauterii> cett. وهذه صورة المكواة ، 2. <تكوى على> AHS. أى طرف شيت وعلى حسب الذى تمكن وهذه صورة الانبوبة<

CHAPTER TWENTY-THREE. On cauterization for hoarseness and for constriction of the breath.

When humidities prevail over the windpipe, and especially when there is a frigid temperament, the patient should first have his bowels opened with a laxative. Then cauterize him once in the hollow of the jugular fossa at the root of the throat in the hollow part. Take care that the cautery does not pierce through to the gullet, and burn no more than half of the thickness of the skin. Then cauterize him once more, strongly, at the junction of the neck with its last vertebra, the cautery being claviform as described above. Then treat as prescribed before till healed.

BOOK ONE. CHAPTER TWENTY-THREE

The bolt-shaped cautery has already been noted. (See under chapter 3.)

الفصل الثالث والعشرون فى الكَوِّ من بحوحة الصوت وضيق النفس
إذا غلبت الرطوبات على قصبة الرئة ولا سَيِّما إذا كان ذلك مع
برودة المزاج فينبغى أن يستفرغ العليل أولاً بالأدوية¹ المسهلة، ثم
تكويه كَيَّة فى نقرة النحر عند أصل الحلقوم فى الموضع المنخفض فاحذر
أن تصل بالكَوِّ الى الحلقوم ولا تحرق من الجلد إلا نصفه، ثم اكويه
كَيَّة أخرى عند مفصل العنق فى آخر خرزة منه بليغة وتكون المَكْوَاة
مسمارية على الصفة التى تقدّمت، ثم عالجه بما تقدّم ذكره حتى يبرأ
إن شاء الله،

بعضه، 2. MP. A. بالايارجات والادوية، ¹H, corr. H¹, بالايارجات 1.
cett.

CHAPTER TWENTY-FOUR. On cauterization for pulmonary disease and for cough.

When the cough and pulmonary disease arise from cold humidities and the patient suffers from no fever or wasting but the disease is chronic, sear him with two cauterizations over the two clavicles, in the soft depressions; and with another cauterization in the mid-line of the chest between the breasts. Let the cautery be claviform as described above. Then treat as before prescribed till healed. And if you prefer, make punctate cauterizations with the cautery called 'punctate'; its shape has already been described under pricking for earache. The punctures should number upwards of thirty. Then treat as aforesaid until healed. Sometimes also a trident cautery is prepared, in this manner, with which you can burn more speedily; for with this you can apply three cauterizations at once (fig. 19).

BOOK ONE. CHAPTER TWENTY-FOUR

Cauterization for these pulmonary diseases is another peculiarly Arab operation. The bolt- and needle-cauteries are again recom-

mended. Both MSS. also show an interesting 'trident' cautery which will be discussed in the following note.

الفصل الرابع والعشرون في كُتَي مرض الرئة والسعال

إذا كان السعال ومرض الرئة عن رطوبات باردة ولم يكن بالعليل حتى ولا سَلَّ وكان المرض مزمنًا فاكوه كُتَيَّين فوق الترقوتين في المواضع المنخفضة اللينة الفارغة وكُتَيَّ أخرى في وسط الصدر بين الثديين وتكون المكواة مسماوية على الصورة التي تقدّمت¹، وإن شئت فليكن كُتَيَّك تنقيطًا بالمكواة التي تسمى النقطة وقد تقدّمت صورتها في تنقيط وجع الأذنين وتكون النقط من² ثلاثين نقطة إلى نحوها³، ثمّ تعالجه بما تقدّم ذكره حتى يبرأ، وقد تصنع مكواة ذات ثلاث شعب على هذه الصورة ويستعجل بها الكُتَيَّ لأنك تكوى بها في مرّة واحدة ثلاث¹⁰ كُتَيَّات، وهذه صورة المكواة:



Fig. 19

Marsh

M. ما حولها. 3. AH. في. 2. HP. > ثمّ عالجه بما تقدّم حتى يبرأ. 1.

CHAPTER TWENTY-FIVE. On cauterization of the axilla.

When the head of the humerus is dislocated on account of the synovial fluid¹ or when it does not remain in the correct position after the dislocation has been set, so that this becomes a regular occurrence—it is set and then dislocates with the least movement, as we have ourselves seen; you must first set the luxation, then make the patient lie down on his back or on his sound side; then with the fingers of the left hand lift up the skin of the axilla if the joint has dislocated downwards. Then heat a cautery provided with two spits in this manner (fig. 20). Then with that burn through the fold of skin till you have perforated to the other side, getting four cauterizations.

¹ Lit. 'lubricating humidities'.

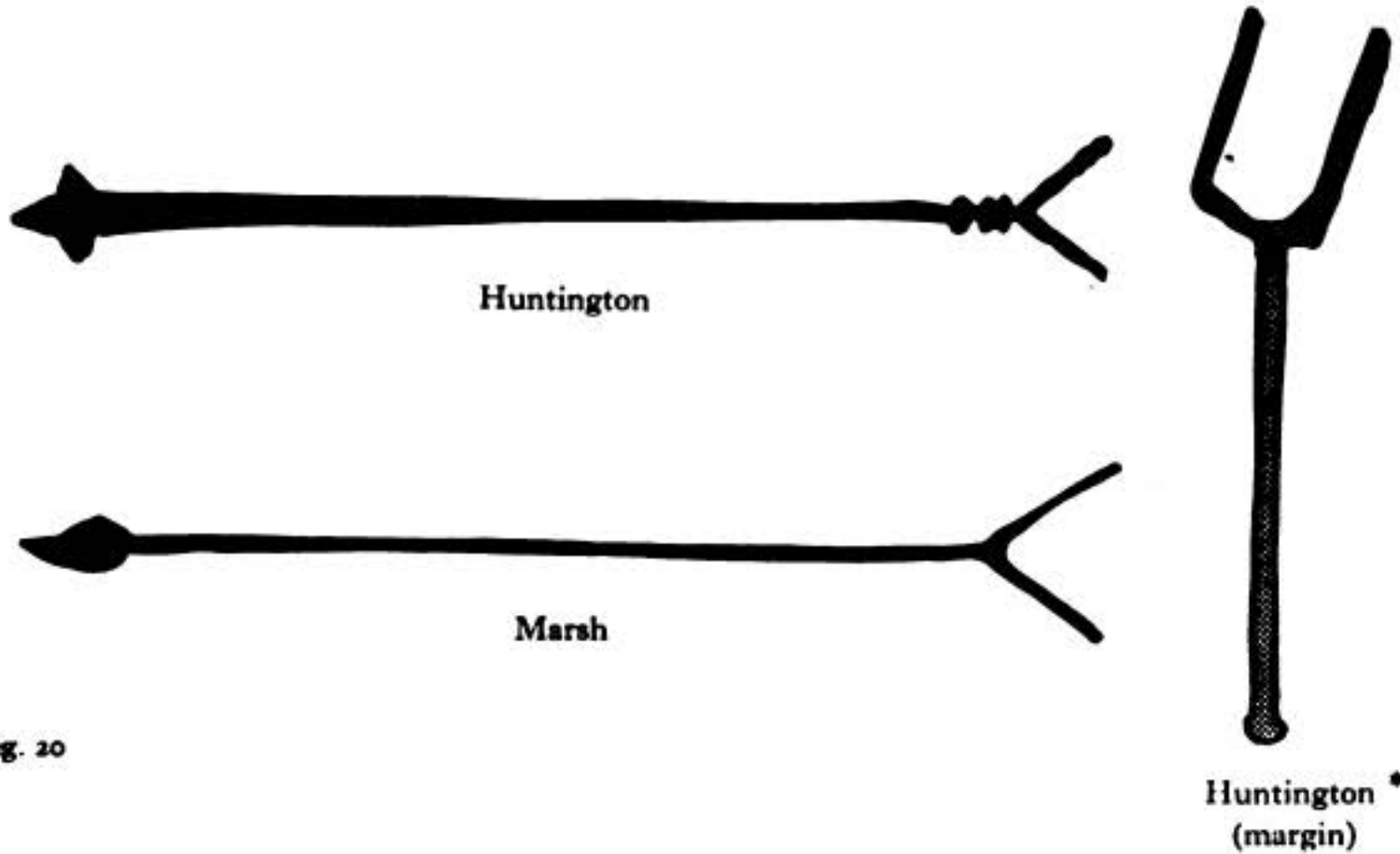
BOOK ONE. CHAPTER TWENTY-FIVE

The operation of cauterization for recurrent dislocation of the shoulder joint is found minutely described by Hippocrates in his *Περὶ ἄρθρων* xi; and repeated in varying fullness in following Greek and Latin writers including Paulus Aegineta (vi. 42). In the preceding chapter, as well as in this, Albucasis teaches that the skin is to be pinched up into a fold and the point of the cautery, whether bolt-shaped, punctate, or double- or triple-pointed forms, carried through from one side to the other so giving two cauterizations of the surface at each application. Hippocrates gave directions in these terms: 'The cautery irons should not be thick nor very rounded but elongated, for so they pass through more quickly. For thick irons, since they pass through slowly, leave larger eschars to come away and there is a risk of the cicatrices breaking into one another.' Then he goes on to describe how, if they are well spaced, a third cauterization may be made between the other two. The trident cautery was not altogether a new idea, as a *cauteris trisulcus* is mentioned by Caelius Aurelianus (*Morb. Chron.* iii. 57) for cauterization over the spleen, as recommended by Albucasis in a later chapter (see chapter 30). But the Arabs seem to have been the first to appreciate that irons with two spits as in this chapter, or better still with three as in this and the foregoing chapters, would without trouble obtain the effect of

having the cauterizations both deep enough and correctly spaced. The use of the instrument depended on the idea that the curative effect was proportionate, not to the area cauterized, but to the number of separate cauterizations, even though each be quite small. And in both these two and in later chapters it is taught that the skin should be pinched up into a fold and the point or points carried through; and by pinching up the skin of the axilla, as Albucasis describes in language very like that of Hippocrates, there is no danger of injuring the important nerves and vessels of the axilla; then by using the cautery with two or three spits the effect prescribed by Hippocrates is obtained at one application. Albucasis very likely took his account of burning the axilla from Paulus Aegineta (vi. 42); but Paulus does not seem to have anticipated this particular type of cautery. As to the illustrations, which are abundant, it is clear what the general idea was; the trident iron of figure 19 has the spits at right angles to the handle and the spits are much thicker than those for burning the axilla. These, shown as figures 20 and 21, are specified as slender, like probes; the spits come straight away from the shaft; both MSS. show a variety with the points spread like fingers; while the Huntington MS. alone gives another variety with parallel prongs as in the last chapter, whether two- or three-pronged.

الفصل الخامس والعشرون فى كى الابط¹

اذا انخلع رأس العضد بسبب رطوبات مزلفة او لم يثبت فى حين رده عن² تخلعه حتى يصير له ذلك عادة ترد ثم ينخلع عند أدنى حركة تعرض كما شاهدناه فينبغى أن يرد الفك أولا ثم يستلقى العليل على ظهره او على الجانب الصحيح ثم ترفع الجلد الذى فى داخل الابط الى فوق بأصابع من يدك اليسرى إن كان المفصل انخلع الى داخل ثم تحمى المكواة ذات السفودين التى هذه صورتها :



ثم تكوى بها الجلد حتى تنفذها الى الجانب الآخر ويأتى شكل الكى أربع كيات، وقد يكوى بمكواة ذات³ ثلاث سفافيد³ فيكون شكل الكى

الثلاث سفافيد A, الثلاث السفافيد 3. cett. عند H. 2. P. <والخلع> 1. الثلاث P, ثله سفافيد M, ثلث شعب سفافيد H, السفافيد الثلاث B, الثلاث SV. السفافيد

* Drawings, or parts of drawings, shown hatched instead of solid black, represent red (perhaps copper) in the original.

The cautery may be of three prongs and then the form of the cauterization will be six burns. The prongs should be of the fineness of a probe. This is the figure of the cautery with three prongs (fig. 21). Sometimes there is added yet one more so there will be eight burns. Put on the burns leeks well pounded with salt; then keep the patient absolutely quiet so as not to move the joint for a time till it gains strength.

If the dislocation has gone upwards, which very rarely happens, then cauterize him above the shoulder with one good claviform cautery or with multiple punctured cauterizations. Thus the joint will gain strength and the humidity will disappear and the patient will be cured.

١٥ حينئذ ست كيات وتكون السفايف على رقة المروء ، وهذه صورة المكواة
(٤) ذات الثلاث سفايف:

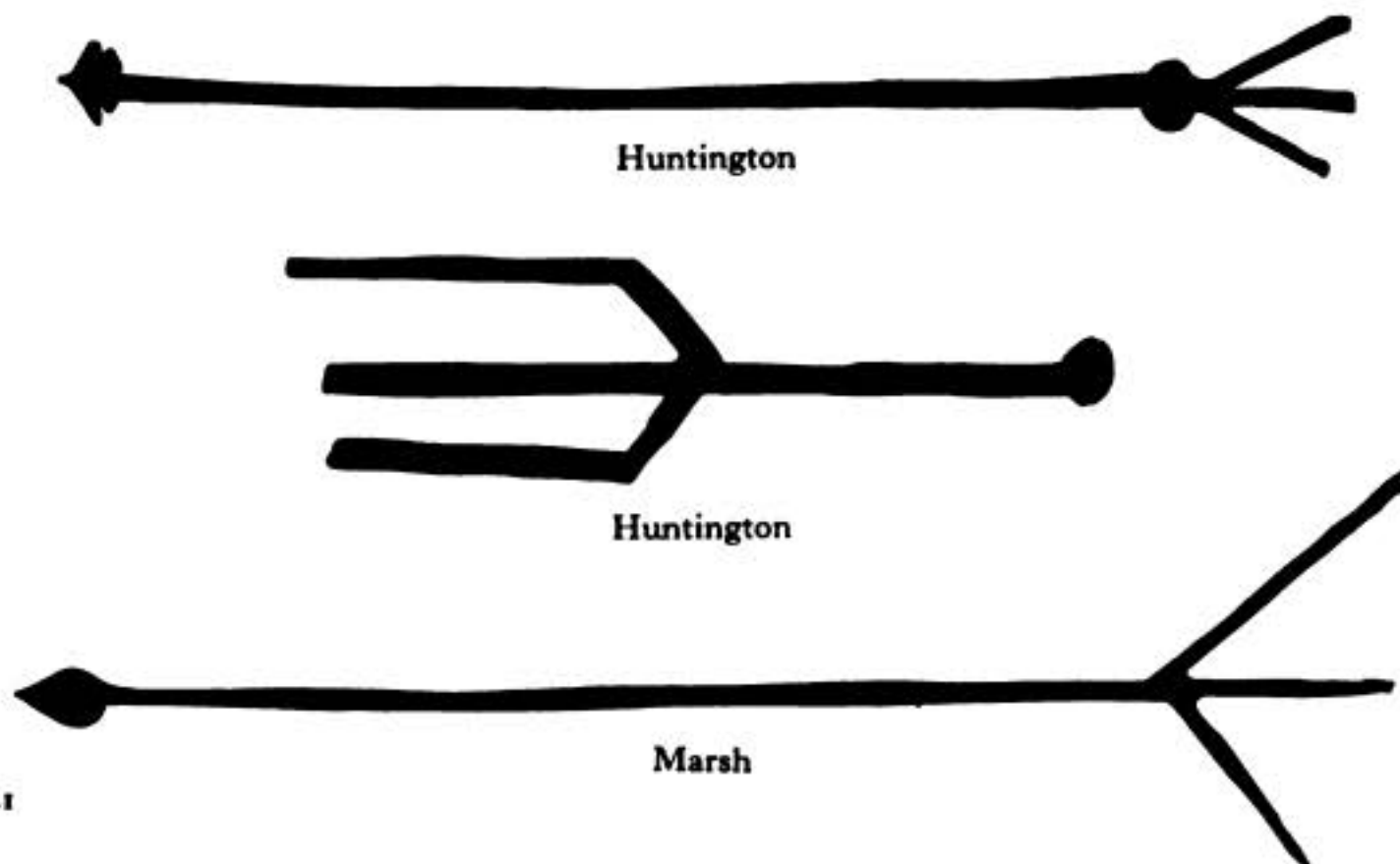


Fig. 21

وقد يزداد على هذا العدد واحدة فتكون الكيات ثمانية، ثم تحمل
على الكى الكرات المدقوق مع الملح ثم تلزم العليل الدعة ولا يحرك
العضو زماناً حتى يقوى،

١٥ وإن كان الخلع الى فوق وقلما يكون ذلك فاكوه فوق المنكب كية
واحدة مسمارية جيدة او كيات كثيرة تنقيطاً^٥ فإن الفصل يشتد وتذهب
الرطوبة ويبرأ العليل،

H, السفايف الثلاث ذات B, الثلاث A, ذات الثلاث السفايف, PV, 4.
تنقيطها, BV, 6. codd. ثمانية 5. om. M. ذات الثلاث السفايف
A, cett. تنقيطها.

CHAPTER TWENTY-SIX. On cauterization of the stomach.

When cold and many humidities get into the stomach, so that its constitution is disturbed and much fluxion has come to it, and a variety of treatment has been tried to no effect, the patient must be put on his back with legs and arms outstretched; then give him a threefold cauterization: one a finger's breadth below the hollow of the chest with the claviform cautery; and two below and to the sides of the first cauterization, so that it has a triangular appearance; but there should be some distance between each lest they run together when suppuration sets in. Let the depth of the burning be two-thirds of the depth of the skin. Let the shape of the cauterizations be thus and of no more than this size (fig. 22). If you wish, make a

BOOK ONE. CHAPTER TWENTY-SIX

The condition treated here is in the nature of a non-specific discomfort which we might term gastritis. The matter of this chapter is taken bodily from Aetius or Paulus Aegineta (VI. 49). It is uncertain why Albucasis should give the patterns of the burnings here; he rarely does so even in chapters containing most complicated instructions; perhaps it was with the intention of illustrating the directions of the author he was copying. He specifies the bolt-shaped cautery for this operation. But Paulus speaks of knobbed cauteries which may be the same as those spoken of by Hippocrates as *φαλακρά*, and

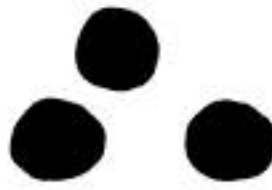
explained by Galen as having a ball at the tip, or, as he says, like those having olivary points. Figure 24 shows an instrument to give a broad superficial eschar; we might call it a plate cautery. This seems to be of Arab design. The Huntington drawing is very clear and shows a plate about the size of a farthing fixed by a kind of bucket handle to the shaft; it seems likely from the use of red ink for the plate that this was of copper. The plate cautery was also to be used in cases of disease of the liver (27), dislocation of the femur (40), and sciatica (41).

الفصل السادس والعشرون في كَيّ المعدة

إذا حدث في المعدة برد ورطوبات كثيرة حتى أخرجها عن مزاجها وكثرت النزلات اليها وعولجت بصنوف العلاج فلم ينجع فينبغي أن يستلقي العليل على ظهره ويمدّ ساقيه ويديه ثم تكويه ثلاث كَيّات ٥ كَيّة تحت^١ ملعقة الصدر بقدر أصبع بمكواة مسماريّة وكَيّتين أسفل عن جنبتي الكَيّة الواحدة حتى يأتي شكل الكَيّات مثلثا وأبعد بينهما لئلا تجتمع إذا تقيّحت^٢ ويكون عمق الكَيّ قدر^٣ ثلثي ثخن^٣ الجلد ويكون شكل الكَيّات على هذه الصورة وعلى هذا القدر بلا مزيد :



Marsh

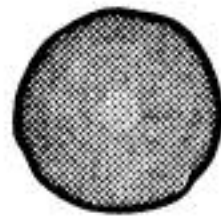


Huntington

Fig. 22

وإن شئت كويته كَيّة واحدة كبيرة في وسط المعدة على هذه

١٥ الصورة :



Huntington

Fig. 23

١. P. ثلث H، ثخن ٣. AMP. انفتحت. ٢. MV. كبيرة تحت P، عند ١.

single large cauterization in the middle of the stomach, thus (fig. 23). The cautery for this single cauterization is circular, thus (fig. 24).

The stomach may be cauterized with punctures in the case of a person who fears this operation. You will have marked the points with ink on the stomach, as many as you wish; then sear with a punctate cautery. Then treat as previously described until he be healed.

وتكون المكواة التي تكوى بها هذه الكيّة الواحدة على شكل دائرة
على هذه الصورة :

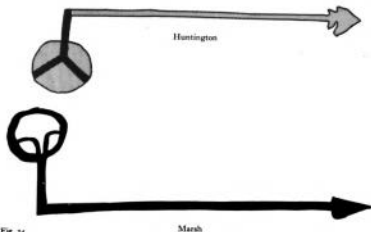


Fig. 24

Marsh

وقد تكوى المعدة تنقيطا لمن جزع من هذا الكّي وهو أن تعلم
على المعدة نطا على القدر الذي تريد بالعداد ثم تكويه "بمكواة نقطيّة"
ثم تعالجه بالعلاج الذي تقدم حتى يبرأ.

4. M. بالنقطة، BV بمكواة النقطة.

CHAPTER TWENTY-SEVEN. On the cauterization of a cold liver.

When there is pain in the liver from cold and humidity or from thick vapour, so there is a severe disturbance of its natural constitution, and the patient has been treated as prescribed in the appropriate section but with no effect, the patient should lie back, and you should mark with ink the places of three cauterizations, in this form and exactly of this size (fig. 25) below the costal cartilages, where the elbow reaches. Let there be a finger's breadth between each pair of cauterizations and let the burning be straight along the length of the body. Do not press the cautery hard with your hand. Let the thickness of the skin you burn be half its thickness, not more; and let the patient be standing on his feet during the cauterization.

BOOK ONE. CHAPTER TWENTY-SEVEN

It is impossible to conjecture what disease of the liver is taken up in this chapter; but cauterization for pain in the liver region, described specifically by some authors as abscess, is given as far back as Hippocrates who advises glowing wooden spits. Celsus says that some cauterize an actual abscess (iv. 9). Paulus Aegineta gives the first description of cauteries for this purpose, calling them slender knobbed cauteries (vi. 47).

But here Albucasis is not describing piercing cauteries to open an abscess but distinctly says they are to be used for the skin only. The Huntington figure is hard to understand but the Marsh figure seems like a side-view of an oval plate cautery giving burns shaped like the preceding illustrations (fig. 25). On the whole, then, it seems reasonable to regard it as a plate cautery in the same category as in the last chapter.

الفصل السابع والعشرون في كَي الكبد الباردة¹

إذا عرض² من الكبد² وجع عن برودة ورطوبة أو عن ريح غليظة حتى خرجت من مزاجها الطبيعيّ خروجاً مفرطاً وعولج العليل بما ذكرنا في التقسيم فلم ينجع ذلك فينبغي أن يستلقى العليل على قفاه⁵ وتعلم بالمداد ثلاث كَيّات على هذا الشكل وهذا المقدار بعينه:

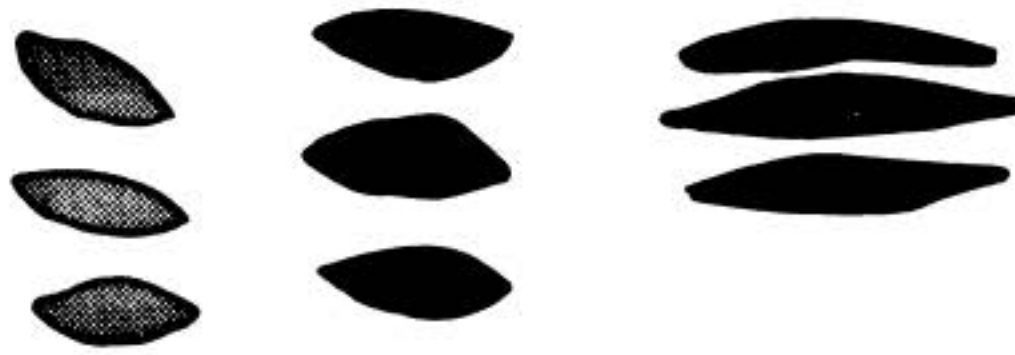


Fig. 25

Huntington

Marsh

على الكبد أسفل من الشراسيف حيث ينتهى مرفق الإنسان ويكون بعد كلّ كَيّة وكَيّة على غلظ الأصبع ويكون الكَيّ على طول البدن مستقيماً ولا تنمّ يدك بالمكواة نعمّاً وليكن قدر ما تحرق من ثخن الجلد قدر نصفه لا مزيد ، ويكون العليل قائماً على قدميه فإن لم يكن قائماً

MH. في الكبد، A. بالكبد. 2. BH. البارد. 1.

Alternatively he may be recumbent with legs outstretched and arms raised. Figure of the cautery (fig. 26). You will also be able to do these cauterizations with the edged cautery when you have craft and facility in the art. Be careful lest you go too deep with the cautery and burn the whole thickness of the skin and the abdomen and penetrate to the intestine, for the skin there is thin; bear this in mind.

١٥ فيكون مضطجعا^٣ قد مدّ ساقيه ورفع ذراعيه^٤ وهذه صورة المكواة:

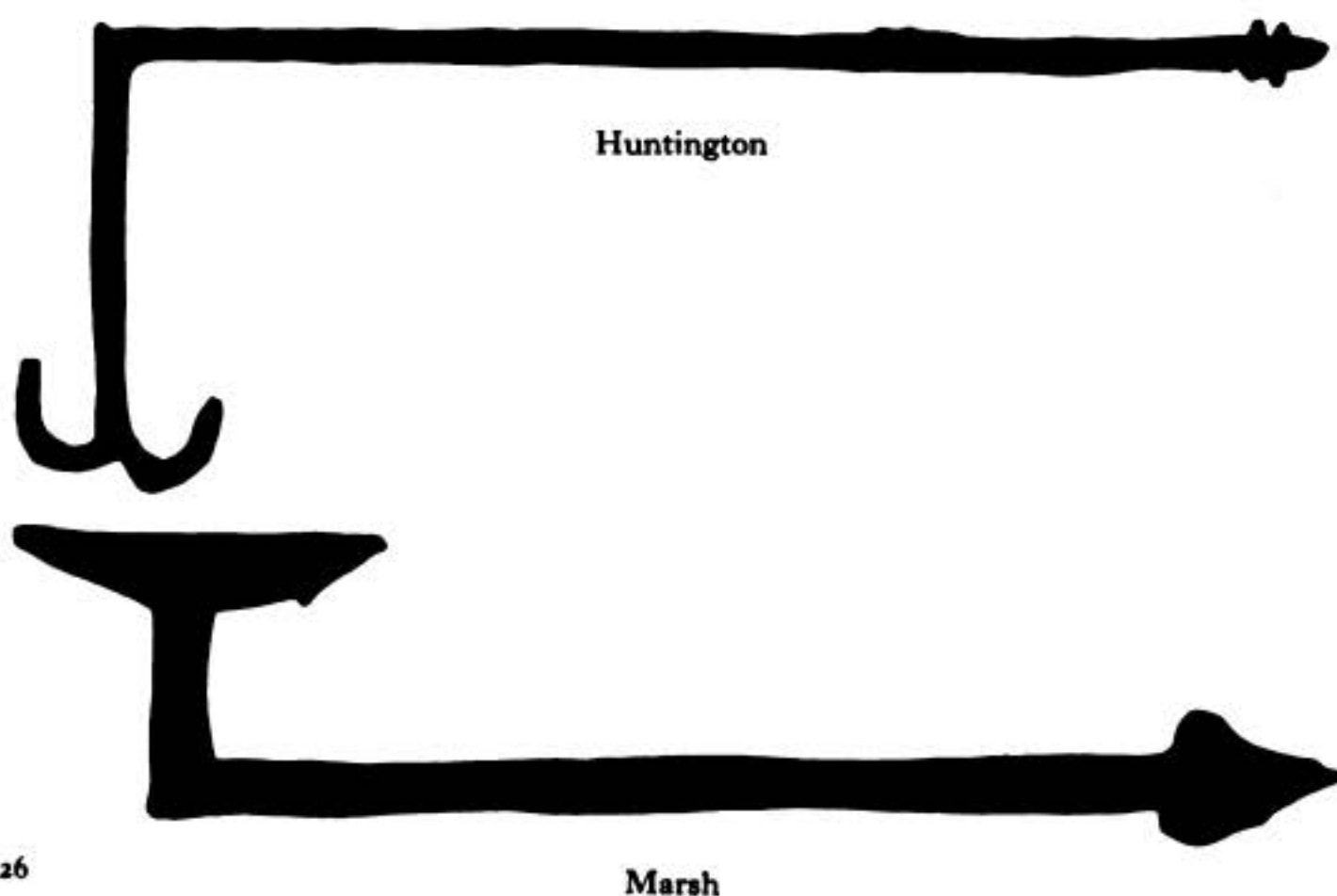


Fig. 26

Marsh

وقد يمكنك أن تكوى هذه الكيّات بالمكواة السكينية إذا كان معك رفق وحذق بالصناعة وتحفظ لئلا تمعن في الكيّ فتحرق الجلد كله فتحرق البطن وتصل الى الأمعاء^٤ فإن الجلد هناك رقيق فاعلمه،

B. المعاء، H. المعدة. 4. M. ذراعيه الى فوق ومدود الساقين قدر رفع. 3.

CHAPTER TWENTY-EIGHT. On incising a tumour of the liver with the cautery.

When there is an abscess in the liver and you are anxious to know if the tumour is in the body of the liver or in its capsule: if it is in the substance of the liver, the patient will be suffering from a feeling of heaviness and no very acute pain. But if it is in the capsule of the liver there will be the sharpest intensity of pain and you will see that it has baffled the doctors. Then the patient should lie back on his neck; then mark the place of the swelling with ink. Then heat the cautery in the fire, this being the cautery resembling a probe, of this form (fig. 27), and with that make one cauterization till the whole thickness of the skin is burnt through, finishing up at the capsule so that all the purulent matter comes out. Then apply the treatment for wounds. This kind of cauterization should not be employed except by one who has a long experience of the medical art and who has frequent practice at dealing with this kind of disease. Then he can undertake this kind of operation. But in my opinion it would be better to pass it by.

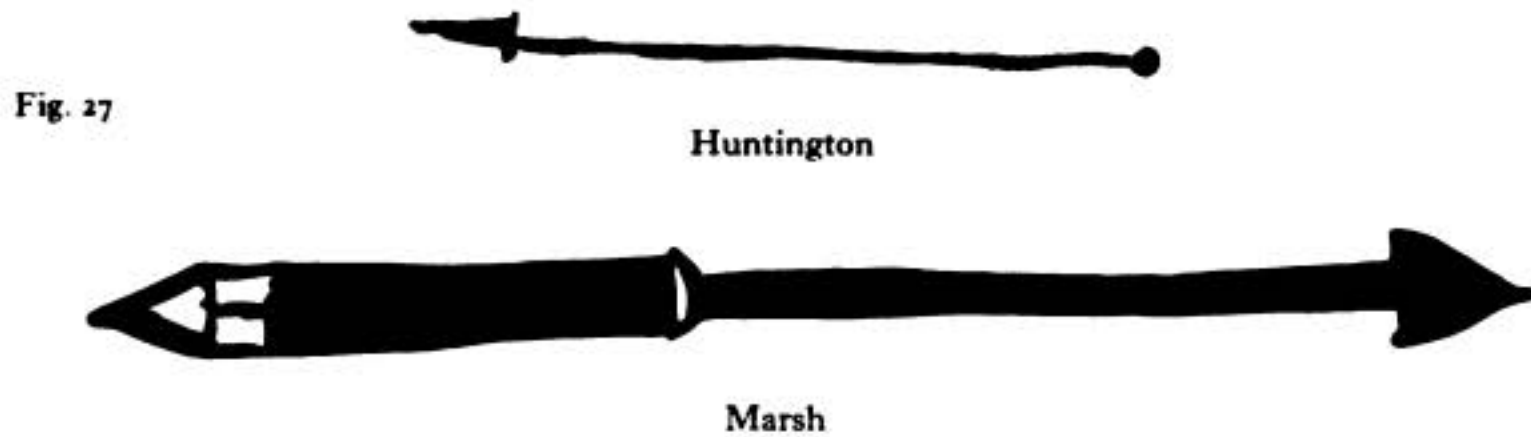
BOOK ONE. CHAPTER TWENTY-EIGHT

Here a true liver abscess is described, and with it an instrument for opening it that is quite specific, and peculiar to Albucasis. The Huntington MS. shows a plain trocar; evidently the piercing qualities are more important than the burning; but the Marsh figure is more interesting, indicating not merely a trocar used hot as a cautery, but also a cannula to pass it through. No previous author had put forward anything like this. It is to be noted, however, that while Albucasis suggests evacuating the pus, and a remarkable instrument for this, he advises his readers not to undertake it unless experienced, and even then, he says, it is better left alone. We have seen that Paulus Aegineta mentions knobbed cauteries for opening abscesses of the liver (vi. 47) and Aretaeus (*Morb. Chron.* 13) mentions the use of an instrument that both cuts and burns, for the same complaint; this probably would be a pointed perforating one. Hippocrates (*Aphorisms* vii. 45) merely refers to both cutting and burning an abscess without describing what sort of instrument should be used. It is noted that this iron is called a 'probe cautery' not a punctate one, and is to be distinguished

from it. The latter, already shown several times (see chapters 5, 9, 24, and 25 for the double- and triple-pointed kind) was designed for piercing through skin thickness only; the former was intended for making an opening of some size through a considerable thickness of tissues. It will also be noted that the probe-cautery is to be used for cauterizing warts and anal fistulae (chapters 35 and 36); in the latter its use seems fairly self-evident. Also in chapter 45, on cauterizing for hernia, there is a figure of a curious iron described as being of probe form, which has a short slender cross-piece, saying that formerly some of the Ancients said that ruptures were to be treated with an instrument like this. But it is likely that this was the 'gamma-shaped' cautery of Paulus (vi. 66). Another reference to the probe cautery is in the following chapter (29); the Ancients are said to have used it in cases of pleurisy, or more likely, from the description, empyema; but this is mentioned only to condemn it as a remedy. On the gamma-shaped cautery see also footnote to the translation of Book II, chapter 62.

الفصل الثامن والعشرون فى بطن ورم الكبد بالكى

إذا عرض فى الكبد خراج وأردت أن تعلم إن كان ذلك الورم فى لحم الكبد أو فى صفاقه فإنه إن كان فى لحم الكبد فإنه يجد العليل ثقلاً ووجعاً بغير حدة وإن كان فى صفاق الكبد كان مع الوجع "حدة شديدة ورأيت" أنه قد أعيا الأطباء علاجه فينبغى أن يستلقى العليل على قفاه ثم تعلم على الموضع الوارم بالمداد ثم تحمى المكواة² فى النار وهى المكواة² التى تشبه الميل وهذه صورتها :



وتكويه بها كية واحدة حتى تحرق الجلد كله وتنتهى بالكى الى الصفاق حتى تخرج المدة كلها ثم تعالجه بعلاج الخراجات حتى يبرأ ، وهذا النوع من الكى لا ينبغى أن يستعمله إلا من طالت درسته فى صناعة الطب وجرت على يديه هذه الامراض بالتجربة مرارا فحينئذ يقدم على مثل هذا العمل وتركه عندى أفضل ،

1. شدة فان رأيت B. 2. P, om. cett.

CHAPTER TWENTY-NINE. On cauterization for pleurisy.

The Ancients mentioned a cauterization for cold pleurisy by means of the roots of the long birthwort, in this fashion: you take the longest you can find of the roots of the long dry birthwort, and of the thickness of one finger; dip this in oil and light it at the fire; then burn the patient with one cauterization in the space between the junction of the neck with the clavicle; and two small cauterizations below the jugular veins, inclining slightly toward the region below the beard. And two big cauterizations above the nipples in the space between the third and fourth ribs; and two more between the fifth and sixth ribs, tending slightly toward the back; and another in the middle of the chest; and another above the stomach; and three more behind, namely, one between the scapulae and two on either side of the dorsal spine below the one between the scapulae. It is not necessary to cauterize deeply, but let it be a mere hint, in the outer skin.

Now one of the Ancients mentioned that there were some people who used an iron cautery shaped like a probe, and introduced it red hot into the intercostal space until it reached the abscess itself and evacuated the pus, as we have mentioned under tumour of the liver. But in this perforation with the cautery there is a danger either that the patient may die on the spot or that an incurable fistula may arise at the place.

الفصل التاسع والعشرون في كَيّ الشوصة

ذكرت الاوائل الكَيّ بأصول الزراوند¹ للشوصة الباردة على هذه
الصفة وهو أن تأخذ من أصول الزراوند اليابس الطويل أصلا واحدا
أطول ما تجد منه ويكون كغلظ الأصبع ثم تغمره في الزيت وتقدمه² في
النار³ ثم تكويه كَيّة واحدة فيما بين اتصال الترقوة بالعنق وكَيّتين
صغيرتين دون الوداج قليلا مائلة الى الناحية التي تحت اللحية
وكَيّتين عظيمتين فوق الثديين فيما بين الضلع الثالث والرابع⁴ وكَيّتين
ايضا فيما بين الضلع الخامس والسادس مائلة الى خلف قليلا وكَيّة
أخرى⁵ وسط الصدر وأخرى فوق المعدة وثلاث كَيّات من خلف واحدة
¹⁰ فيما بين الكتفين واثنين عن جنبى الصلب أسفل من الكَيّ الذي يكون
فيما بين الكتفين ولا ينبغي أن تعمق يدك بالكَيّ بل يكون في ظاهر
الجلد تشميما،

وقد ذكر⁶ بعض الاوائل أنّ من الناس من كان⁷ يستعمل مكواة
من حديد شبه الميل فيحميها ويدخلها فيما بين الاضلاع حتى ينتهي
¹⁵ بها الى نفس الورم ويخرج المدة كما ذكرنا في ورم الكبد، وفي هذا
البط بالكَيّ من الغرر إما أن يموت العليل من ساعته وإما أن يعرض
في الموضع ناصورا⁸ لا بر⁹ له،

1. M. اليابس الطويل. 2. H. توقده. 3. P. <حتى يحمى>. 4. om.

5. P. <في>. 6. H. ذكرت. 7. om. M. 8. HV². cett. ناصورا. 9. AHP.

CHAPTER THIRTY. On cauterization of the spleen.

When you have treated disease of the spleen by the means that we have mentioned in the section and your treatment is ineffectual, there will be three ways of cauterization, each of which will be correct. One is to make three or four cauterizations in a row over the long axis of the spleen like the cauterization of the liver, a figure of which has been given above.¹ Let there be between each pair of burns a finger's breadth or a little more. Let the cautery be of the same shape as described above under cauterization of the liver. Do not put pressure on the cautery. Have the patient's body supine. The second method is to heat the cautery provided with two prongs, described in the chapter on dislocation of the shoulder.² Lift up the skin over the spleen at the level of the patient's left elbow; and let the fold of skin lie across the patient's body so that the cauterizations will fall longitudinally. Then push in the two prongs, well heated, till you have pierced the skin from side to side. Then take out the cautery; and there are four cauterizations. Or if you prefer you can burn with the other cautery, of three prongs. Then dress the site of cauterization after you have allowed pus to run therefrom for many days. This is more effective than any of the preceding treatments.

¹ Fig. 25 in I. 27.

² I. 25. The MSS. here all read 'elbow' for 'shoulder'.

BOOK ONE. CHAPTER THIRTY

Chapters 24 and 25 give the figures; they seem to have been used first of all for the spleen.

الفصل الثلاثون في كَيّ الطحال

إذا عالجنا مرض الطحال بما ذكرنا من العلاج في التقسيم فلم
ينجع علاجك فالكَيّ فيه على ثلاثة أوجه كلّها صواب أحدها أن تكويها
ثلاث كَيّات أو أربع مصطفة على طول الطحال على شكل كَيّات الكبد
5 التي تقدّم شكلها ويكون بين كلّ كَيّة وكَيّة قدر غلظ الأصبع أو أكثر
قليلا وتكون صفة المكواة الصفة التي ذكرنا في كَيّ الكبد سواء ولا
تعمق يدك بالكَيّ وصورة العليل ملقو على ظهره، والوجه الآخر في
الكَيّ أن تحمى المكواة ذات السفودين التي ذكرنا في باب كَيّ تخلع
المرفق وترفع الجلدة التي قبالة الطحال حيث تنتهي مرفق العليل
10 اليسرى ويكون رفعك الجلد على عرض البدن لتقع الكَيّات على طول
البدن ثمّ تدخل السفودين محمية جدًا حتّى تنفذ بهما الجلد من
الناحية الأخرى ثمّ تخرج المكواة فتكون الكَيّات أربعاً، وإن شئت أن
تكوى بالمكواة الأخرى ذات الثلاثة سفافيد ثمّ تعالج موضع الكَيّ بعد
أن تتركه يمدّ القيق أيا ما كثيرة فهو أنجع من سائر ما تقدّم من
15 العلاج،

CHAPTER THIRTY-ONE. On the cauterization of dropsy.

The cautery is particularly effective in ascites.¹ When you have, without effect, treated a dropsical person with the various measures mentioned in the section on diseases, you should sear with four cauterizations around the umbilicus, and one over the stomach, another over the liver, and another over the spleen, and two behind his back between the vertebrae, one at the level of the breast and one at the level of the stomach; and let the burn be almost skin-deep. Then keep the burn open so that it suppurates for a long while. Do not let the patient, after cauterization, be without the necessary treatment, so that you combine both methods² for him, and a cure will speedily come to him. The cautery with which his belly is cauterized should be claviform like the figure previously given; while the one with which his back is cauterized should be olivary.

¹ Lit. 'wine-skin dropsy'.

² i.e., cauterization and medical treatment.

BOOK ONE. CHAPTER THIRTY-ONE

This instrument for dropsy is called 'bolt-shaped'; most likely as illustrated in chapter 3.

الفصل الحادى والثلاثون فى كى الاستسقاء

الكى إنما ينفع فى الاستسقاء الزقى خاصة، اذا عالجت المستسقى بضروب العلاج الذى ذكرنا فى التقسيم فلم ينجع علاجك فينبغى أن تكويه أربع كيات حول السرّة وكية واحدة على المعدة وكية أخرى على الكبد وكية على الطحال وكيتين وراء ظهره بين الخرزات واحدة قبالة صدره وأخرى قبالة معدته، ويكون قدر عمق الكى قريبا من ثخن الجلد، ثم تترك الكى مفتوحا يمدّ القيع زمانا طويلا، ولا تخل العليل من العلاج بعد الكى بما ينبغى "لتجمع له" المعنيين² فيسرع اليه البر، وصورة المكواة التى يكوى بها الظهر تكون مسارية على ما تقدّمت صورتها والتى يكوى بها الظهر تكون زيتونية،¹⁰

AV, ليجتمع له, S, لحجم اليه, M, ان يجتمع اليه, H, ليجتمع اليه, B, 1. B, P. العسن, AB, المنفعتين, H, المعنيان, MSV, 2. P. لحجم فيه

CHAPTER THIRTY-TWO. On cauterization of the legs and feet.

When, in the sufferer from dropsy, these swell and become full of yellowish fluid, you should cauterize the upper surface of the feet in the depression between the little and fourth toes; hold your hand upright with the cautery; do not let it slant. Then remove your hand and do no more cauterization whatever; for the yellowish fluid will exude. The cautery should be of this type (fig. 28). Then sear the legs with two cauterizations on each leg; cauterize with the bladed end of the cautery, and let it be along the length of the leg: one under the knee, the other lower than that, about the middle of the leg; and two more cauterizations over each femur. Leave the burns open without treatment for a long while during which the fluid will exude from them. Then dress with all that we have described.

BOOK ONE. CHAPTER THIRTY-TWO

The edged irons shown in this chapter for dropsy of the feet and legs are larger models of the type shown in chapter 18 for the cure of hare-lip. As has been said, the burning end was a thick-edged piece of iron fixed at right angles to the shaft; it may indeed be that described by Paulus as 'gamma-shaped'

(γαμμοειδής). The value of the cauterization here evidently lies not so much in the actual burning as in the puncturing of the skin, allowing the oedema fluid to escape. Archigenes proposed a similar method for dropsy of the feet and ankles.

الفصل الثاني والثلاثون في كَيِّ القدمين والساقين

إذا تورمتا في المستقي وامتلأتا ماءً أصفر فينبغي أن يكوى على ظهر القدم في النقرة التي بين الخنصر والبنصر وأقم يدك بالكواة ولا تعوجها ثم ارفع يدك ولا تعيدها البتة فإنه يرشح الماء الأصفر وتكون الكواة على هذه الصورة :



Fig. 28

Marsh

ثم تكوى على الساقين كيتين كيتين في كل ساق ويكون الكوى بالطرف السفلي من الكواة ويكون الكوى على طول الساق واحدة تحت الركبة وأخرى أسفل منها نحو وسط الساق وعلى كل فخذ كيتين كيتين واترك الكوى مفتوحاً بغير علاج زماناً طويلاً يرشح منه الماء¹ ثم تعالجه¹⁰ بسائر ما ذكرناه

1. P. <الأصفر>. 2. H. كيتين في كل ساق كية، AM كيتين في كل ساق. 1.

CHAPTER THIRTY-THREE. On cauterization for diarrhoea.

When the diarrhoea is due to frigidity and humidities so that the capacity of the stomach and intestines to hold and to digest is impaired, and this has been treated by various methods and is not cured; if you see that the patient is able to endure the cautery and is of unimpaired strength, make a big cauterization on his stomach according to the preceding instructions for cauterization of the stomach with a circular cautery; and four narrow cauterizations round his navel with the thin claviform cautery; and one or two big cauterizations in the lumbar region over the coccyx. And if you see that the humidities are superabundant, and the patient fit to tolerate it, then make one cauterization over the groin and one over the hypochondrium. You may also add two small ones over the stomach near the big one. This is an effective treatment that does not fail to help.

BOOK ONE. CHAPTERS THIRTY-THREE TO THIRTY-FIVE

See notes on chapters 26 (plate cautery), 3
(bolt cautery), and 28 (probe cautery).

الفصل الثالث والثلاثون في كَيِّ الإسهال

إذا كان الإسهال من برد ورطوبات حتى اضعف القوى العاسكة
والهاضمة التي في المعدة والمعاء، وعولج ذلك بضروب العلاج ولم
يبرأ رأيت العليل محتملاً للكَيِّ وافر القوة فأكوه كَيَّة كبيرة على معدته
5 على ما تقدّم في كَيِّ المعدة بمكواة الدائرة وأربع كَيّات حول السرة
لطفاف بالمكواة المسماريّة اللطيفة وكَيَّة على القطن فوق العصعص كبيرة
أو كَيّتين، فإن رأيت الرطوبات وافرة والعليل محتملاً لذلك فأكوه كَيَّة¹
على العانة وكَيَّة على² كل خاصرة³ وربما زدت كَيّتين صغيرتين على
المعدة بقرب الكبيرة فإنه علاج منجح لا يخطأ نفعه إن شاء الله،

1. كبيرة P. 2. BP, خاصرته M, cett. خاصة.

CHAPTER THIRTY-FOUR. On cauterization for anal haemorrhoids.

When there are one or more chronic haemorrhoids in the anus arising from thick and cold humours or corrupt humidities, and they have been treated by those measures mentioned in the section, without effect, then sear the patient with three cauterizations over the lowest dorsal vertebra a little below the flat part of the back, triangularly; and one about two fingers' breadth below the navel. And if you consider that his stomach has become chilled and his food not being digested, and you see his face swollen, then do one big cauterization over the stomach as previously described; and one over his liver; and another over the spleen; with the claviform cautery. Keep the burn open a long while; then dress till healed.

الفصل الرابع والثلاثون في كَوّ بواسير المقعدة

إذا كان في المقعدة بواسير مزمنة كثيرة¹ أو واحدة وكانت من
أخلاق غليظة باردة أو رطوبات فاسدة وعولجت بما ذكرنا في التقسيم
فلم ينجع العلاج فاكوا العليل ثلاث كَيّات على أسفل² خرز الظهر تحت
المائدة قليلا مثلثة³ وكَيّة تحت السرّة بمثل أصبعين وإن⁴ "قَدَرْتَ أَنْ"
معدته قد بردت وطعامه لا ينهضم ورأيت وجهه متورما فاكوه على
المعدة كَيّة كبيرة على ما تقدّم وكَيّة على كبده وأخرى على طحال
بمكواة مسمارية واترك الكَوّ مفتوحا زمانا⁵ ثم عالجه حتى يبرأ إن شا'
الله،

رأيت M, رأيت ان 4. P. بثلثة اصابع 3. 2. om. BH. 1. om. HM.
H. زمانا طويلا, B. اياما 5. P.

CHAPTER THIRTY-FIVE. On cauterization of warts after excision.

When you excise warts, heat a spike-shaped cautery and bring it, hot, to the site of the excised wart, and press down till the cautery reaches the mouth of the vessel whence the blood comes. Do this once or twice over. If the warts be more than one, sear each one separately as we have described; then dress with suitable ointments till healed. And if you burn the patient with one big cauterization over the lumbar region that will add to the effect.

الفصل الخامس والثلاثون فى كَى الثَّالِيل بعد قطعها

إذا قطعت الثُّلُول فاحم المكواة التى تشبه الميل ثم أدخلها
حامية فى نفس الثُّلُول المقطوع وامعن يدك حتى تصل المكواة الى فم
العرق الذى تسيل منه الدماء² تفعل ذلك³ مرة أو مرتين فإن كانت
الثَّالِيل كثيرة فاكو كل واحد كَيْة على ما وصفنا ثم عالجبها بما يوافقها
من المراهم حتى تبرأ، وإن كويته كَيْة أيضا كبيرة على القطن كان أبلغ
فى النفع،

1. P. اصل. 2. BM. الدم. 3. <فى> MV.

CHAPTER THIRTY-SIX. On the cauterization of fistulae in the anal and peri-anal regions.

When the patient will not submit to the cutting operation we have described in its own place, and is afraid of it, he may perhaps be cured with the cautery. So when somebody gets a fistula, and pus and foul humidities have for a long while been running from it, you must first explore it with a fine probe and judge of its depth by the probe. Then heat a spike-shaped cautery and introduce it, hot, into the fistula, in the direction of the bottom of the fistula and to the depth to which the probe entered. And repeat the cauterization till all those corrupt bodies are burnt away; once or twice or three times over, as you have need. But beware of burning a nerve should one be there, or a big blood-vessel. If the fistula penetrates to the urinary bladder or the intestine, beware of all these parts. Do this only when the fistula is in a fleshy part and you judge that it does not open into any other part. Afterwards dress the place till healed. If the place cicatrizes and the flux of humours ceases and it remains so for a long while, you may know that it is perfectly healed. But if the flux of humours from it is not stopped, understand that it has perforated or that at the bottom there is a piece of diseased bone or the like; which will be mentioned in its proper place.

BOOK ONE. CHAPTER THIRTY-SIX

The pseudo-Hippocratic work on fistulae shows that the subject attracted much attention at a very early date; and a great many classical writers from that time onward have something on the subject of *fistula in ano*. But the idea of cauterizing the fistula may have first occurred to Albucasis; and what he has done is to hit on the simple

plan of heating the probe which for centuries had been used for exploration only. We can therefore also say with probability that this must have been a much blunter variety than the probe cautery used in the case of a liver abscess. Unfortunately there is no figure of the instrument.

الفصل السادس والثلاثون في كَيِّ الناصور الذي يكون في المقعدة
ونواحيها

إذا لم يجب العليل إلى الشق والعمل الذي وصفنا في موضعه
وجبن عن ذلك فربما يرى بالكَيِّ فإذا حدث بأحد² ناصور وأزمن جرى
5 القيق منه والرطوبات الفاسدة فأول ما ينبغي لك أن تقيسه³ بمسبار
رقيق ثم اعرف قدر غوره بالمسبار ثم احم المكواة التي تشبه الميل ثم
أدخلها حامية في نفس الناصور على استقامة غور الناصور والقدر الذي
دخل فيه⁴ المسبار وأعد عليه الكَيِّ حتى تحترق تلك الأجسام الفاسدة
كلها مرة أو مرتين أو ثلاثاً على قدر حاجتك، وتحفظ من حرق عصب
10 إن كان هناك أو عرق عظيم وإن كان الناصور يفضي إلى جرم المثانة
أو إلى جرم المعاء فتحفظ من هذه المواضع كلها، وإنما تفعل ذلك
إذا كان الناصور في موضع لحمي وقدرت أنه غير منفوذ، ثم عالج
الموضع حتى يبرأ، فإن انختم⁵ الموضع وانقطع عنه المواد وبقي كذلك
زماناً فاعلم أنه قد برئ على الكمال وإن لم ينقطع عنه المواد فاعلم
15 أنه منفوذ أو في غوره عظم فاسد أو نحو ذلك مما يأتي ذكره في
موضعه.

M. تفشه، B. تفتشه، HV, AP s. p., 3. V. بانسان. 2. om. AHM. 1.

cett. التحم، V. احتم، P. الحتم. 5. P. <من>. 4.

CHAPTER THIRTY-SEVEN. On cauterization of the kidneys.

When pain strikes the kidneys from chill or heavy vapour, and the patient's sexual vigour is impaired thereby, you should burn him right over the kidneys, once on each kidney, with the claviform cautery mentioned before. I have often burnt him with a third cauterization on the flat of the back, making three cauterizations in a line, which is most effective.

**BOOK ONE. CHAPTERS THIRTY-SEVEN
TO THIRTY-NINE**

The popular claviform or bolt-shaped cautery comes up again, for kidneys, bladder, and uterus.

الفصل السابع والثلاثون في كَيّ الكلى

إذا حدث في الكلى وجع عن برد أو ريح غليظة ونقص لذلك
جماع العليل فينبغي أن تكويه "على المتين"¹ على نفس² الكلى كَيّة³ على
كل كلية بالمكواة السماريّة التي تقدّم ذكرها وربما كويناه⁴ ثلثة⁵ في
نفس المائدة فتأتى ثلاث كيّات مصطفة فيكون أبلغ في النفع،

- S. الكلاتين، H. الكلّيتين كيه، A. الكلاتا كيه. 2. H. الكيتين، S. المتين. 1.
P. ثلثه، M. ثلثا. 4. M. كويته، H. كونا. 3.

CHAPTER THIRTY-EIGHT. On cauterization of the urinary bladder.

When there occurs in the urinary bladder a weakness and relaxation due to chill and humidities, so that the patient cannot retain his water, sear him once below his navel, on the bladder, where the pubic hair begins; burn him once also on the right side and once on the left side of the navel; and let the distance of the burn from either side be the length of the joint of the thumb. Cauterize him also once on the lower part of the back, or twice if you need. The cautery should be claviform, as described.

الفصل الثامن والثلاثون فى كىّ المثانة

إذا حدث فى المثانة ضعف واسترخاء عن برد ورطوبات حتى لا
يمسك العليل البول فأكوه كىّ فى أسفل السرة على المثانة حيث يبتدئ
شعر العانة وكىّ عن يمين السرة وأخرى عن شماله ويكون بعد الكى
من كل جانب على قدر عقد الإبهام وتكويه كىّ فى أسفل الظهر أو
كيتين إن احتجت الى ذلك وتكون المكواة مسمارية على ما تقدم،

CHAPTER THIRTY-NINE. On cauterization of the womb.

When matter arises in the womb from chill or humidities and she is thereby prevented from conceiving and her menses are upset; their flow fails or, as they pass, pain accompanies them; then you must cauterize her three times around the navel, as we have mentioned in cauterization of the bladder; and once or twice in the lumbar region in the lower part of the back over the hips. The cautery should be claviform.

الفصل التاسع والثلاثون في كَيِّ الرحم

إذا حدث في "الرحم مادة" من² برد ورطوبات فامتنعت بذلك عن
الحبل وفسد³ طثمها وتعذر دروره أو حدث لها عند مجيئه وجع
فينبغي أن تكوى ثلاث كَيّات حول السرة كما ذكرنا في كَيِّ المثانة
5 وكَيِّ على القطن أسفل الظهر أو كَيِّتين وتكون المكواة مسمارية،

وامتسك M, وقد فسد. 3. MP, om. cett. 2. M, رحم المرأة, cett. 1.
M. اوسطه 4. P.

CHAPTER FORTY. On cauterization of a dislocated hip.

Sometimes harmful humidities reach the hip joint and result in its coming out of its place. The symptom of this is that one leg is longer than the other when one is measured against the other; and a hollow is found there [i.e. at the hip]. Then you should cauterize the patient over the hip joint itself with a circular burn, after you have marked with ink a circle round the femoral joint, so that the joint falls in the middle of the circle. The cautery should be the one whose description has already been given in cauterization of the stomach. But if you have not this cautery by you, give him three cauterizations with the larger size olivary cautery. The burn should be to the depth of the whole thickness of the skin. Then dress till healed.

BOOK ONE. CHAPTER FORTY

Dislocations of the hip were recognized and described by all medical writers from Hippocrates; but none before Albucasis proposed the cautery as a remedy; though indeed recurrent dislocation of the humerus was treated by burning with a pointed iron. The instrument in the present case is evidently the plate cautery illustrated in chapter 26.

الفصل الأربعون في كَيْ تَخْلَعُ الْوَرَكُ

قد تنصّب رطوبات مخاطئة الى حقّ الورك فتكون سببا لخروجه عن موضعه وعلامته أن تطول الساق "على الأخرى" اذا قست² بعضها الى بعض² وتجدر موضع الخلع فيه فراغ فينبغي أن تكوى العليل على حقّ الورك نفسه كَيْة شبه الدائرة بعد أن تعلم بالمداد حول الحقّ كما يدور ليقع نفس الحقّ في وسط الدائرة وتكون المكواة التي تقدّم صورتها في كَيْ المعدة فإن لم تحضرك هذه المكواة فاكوه ثلاث كَيّات بالمكواة الزيتونية الكبيرة وصير³ للكي عمقا³ على قدر ثخن الجلد كلّهُ ثمّ عالجه حتى يبرأ إن شاء الله،

1. P. الواحد على الآخر, M. الآخر, B. على الآخر, HS. عن الآخر.
2. BHM. الكي عمقا. 3. AHS. بعضها ببعض, B. احدهما بالآخر.

CHAPTER FORTY-ONE. On cauterization for sciatica.

When pain occurs in the hip joint and is due to cold and humidities, and the patient has been treated by those means mentioned in the section, and the treatment is ineffectual, and the pain becomes chronic, the patient should be purged of the heavy humours with foetid pills¹ or pills of tamarind or the like; then cauterize him. The means of cauterization in this case is twofold: either with caustic chemicals or with fire. The actual cautery will serve for several methods. One of them is to make three cauterizations over the femoral joint itself in a triangular manner (as fig. 29);² and let them be of a fair depth; and the space between them a finger's breadth. The cautery should be an olivary one. Sometimes there will also be one cauterization in the middle over the actual head of the femur, making four cauterizations in all. The burning may be done with the circular cautery which has been mentioned under cauterization of a dislocated hip; a single cauterization so that the circle embrace the whole joint. Burn through the

¹ *ḥabb al-muntin*, a compound medicament used as a purgative.

² B adds 'Some men are cauterized at the joint with a deep burn, quite deeply to dry the moisture there. Some are cauterized three times: once behind, over the neck of the haunch-bone (reading '*unq al-tuffāḥa*'); once over the knee, on the front of it; once over the turn of the ankle, inside, on the fleshy part.'

BOOK ONE. CHAPTER FORTY-ONE

Cauterization for sciatica is to be undertaken with a selection of irons already described: the olivary; the edged, when the pain goes right down on to the leg; or the plate-cautery. Albucasis then describes and figures an elaborate iron ring cautery. The description is not easy to follow; but with the drawing (fig. 31) to help, the chief difficulties are explained. The meaning of 'bowls open at both sides' is that the component parts were like *cyathi*—i.e. bowls—with the bottoms cut away; that is, if you take a bowl and cut away its bottom you would get a kind of broad ring. Three such were to be used in the construction of the cautery, though the figure in Marsh seems to show only two. The thickness of the ring was to be one-fifth of an inch; the depth about an inch or two; and there was to be a spacing of about an inch between each ring. The outer ring would be about five inches in diameter, the

middle three inches, and the inner ring one inch.

The instrument described and illustrated (fig. 32) for applying caustic to the hip-joint is not altogether unlike the preceding. Again there are bottomless bowls described; but when applied to the skin caustic is poured into them and held thus in contact with the skin. If poured into the space between outer and inner rings a circular burn would be obtained.

The operation of cauterization for sciatica was undertaken very early. Aetius (xii. 3) quotes Archigenes (first century) thus: *Veteres, inquit Archigenes, etiam ustione in ischiadicis usi sunt*; and Celsus in chapter 22 of Book iv devotes some space to the subject. But none of them says how the operation should be undertaken nor describes any specific instrument for it.

The application of heat to the back of the

الفصل الحادى والأربعون فى كى عرق النسا

إذا حدث وجع فى حق الورك وكان "سبب ذلك" برد ورطوبات
وعالجت العليل بما ذكرنا فى التقسيم ولم ينجع العلاج وأزمن ذلك
فينبغى أن يسهل العليل من الأخلاط الغليظة بحب المتن أو حب
5 الصبّارى ونحوه ثم اكوه ووجه الكى فيه على ضربين إما كى بالأدوية
المحرقة وإما كى بالنار والكى بالنار يكون على وجوه كثيرة أحدها أن
تكوى على حق الورك نفسه ثلاث كيات مثلثة على هذه الصورة:

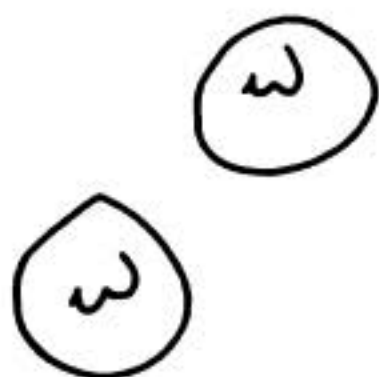


Fig. 29



Marsh



Fig. 30



Huntington

³ وتصير لها³ عمقا صالحا ويكون بعد ما بين كل كية وكية على قدر
غلظ الأصبع وتكون المكواة زيتونية وقد يكوى كية فى الوسط على رأس
10 الورك نفسه فتكون أربع كيات⁴ وإن شئت فاكوه⁴ بالدائرة التى تقدّم
ذكرها⁵ فى كى تخلع الورك كية واحدة لتكون الدائرة تحيط بجميع

1. HM, الصناعى, AB, الصباغى, P, H. ذلك لسبب B, سبب ذلك من
ومن الناس من يكوى فى موضع المفصل. 3. S, الصناعى, V s. p.,
بعمق الكى تعميقا صالحا لتجفيف الرطوبة التى هناك ومن الناس من
يكوى ثلاث كيات كية عن خلف على عمق المقاحة وكية أخرى فوق الركبة
على ظاهرها وكية أخرى فوق رجوع الكعب من خارج على الموضع
cett. صورتها, P, 5. H. وقد كوى. 4. B. اللحمى ويصيرها

whole thickness of the skin. This is the form of cauterization (fig. 30) for sciatica when the pain is localized in the hip joint and does not extend to the femur and the leg. But if it extends to the femur and the leg, cauterize him over the thigh with two burns at the place where the patient indicates the pain to be; and one burn four fingers above the great tendon of the heel, a little to the outer side. The cautery should be edged, and the depth of the burn only to the thickness of the skin. But if the patient points out that the pain reaches to the toes, then cauterize where he has indicated to you, with a punctate cautery, three or four or more perforations if he needs it. If he indicates that the pain is under the knee towards the shank, give him one burn there with the edged cautery. Be careful in all your cauterizing not to carry the cautery so far as to burn a nerve or a large artery; for thence arises grave harm, or crippling, to the patient. I myself have seen more than one person cauterizing over the tendon of Achilles, the cauterization being excessive, and the leg was affected with a defluxion of humours which eventually reached the foot and the whole was riddled; after that came diarrhoea, and, after that, death. If there is pain in two places, cauterize both in this way.

Certain learned doctors have mentioned a cauterization applicable to the hip in this manner: make a bowl of iron with a diameter of half a span; the thickness of the edge of its mouth should be that of a date-stone or a little less. Another bowl is introduced into this, and a third into that;

hand seems an odd way of relieving pain in the hip. The scribe of B has tried to reduce the distance involved by substituting *al-rijl* 'the foot' for *al-yad* 'the hand', but our author has quoted Dioscorides accurately; see Wellmann's edition of the *De Materia Medica* (Berlin, 1907), I, p. 162, 10-16. That this method was used by the Ancients is shown by Sprengel's *Commentarius in Dioscoridem* (vol. II, Leipzig, 1830), p. 448: 'Plinius fimum caprinum fervens eius lateris, cuius coxa patitur, manu tenendum, fimumque ad eum usum punctis aereae acus tollendum esse tradit [Lib. 23, 56]. Et Plutarchus huius ustionis mentionem facit [De sera numinis vindict. p. 415]: Γελοῖος ὁ φάσκων, ἄδικον εἶναι, τῶν ἰσχύων πονούντων καίειν τὸν ἀντίχειρα.'

Dioscorides calls this cautery 'Arab', presumably because it was borrowed from

Arabia. But the extant MSS. of the Arabic translation of Dioscorides by Iṣṭifān ibn Baṣīl, which dates from the mid-ninth century A.D., all read *al-kayy al-ba'ri* 'the dung cautery', as do six of our seven MSS. of Albucasis (though it must be noted that Albucasis is likely to have used not this version but another, made at Cordova just after the middle of the tenth century). The emendation to *al-kayy al-'arabi* is easy, and Dubler and Terés indeed suggest it in their edition of the Arabic version, *La 'Materia Médica' de Dioscórides*, II (Tetuán and Barcelona, 1952-7). But we have resisted the temptation to make this emendation in our text, since the unanimity of the Arabic MSS. of Dioscorides at this point suggests that popular etymology had substituted the obvious 'dung cautery' for 'Arab cautery' long before the time of Albucasis.

الورك وتحرق ثخن الجلد كله،⁶ هذه صفة الكى فى عرق النسا اذا كان الوجع لازما للورك نفسه ولم يكن يمتد الى الفخذ والساق⁷ فإن امتد الى الفخذ والساق⁷ فاكوه كيتين على الفخذ على الموضع الذى⁸ يشير عليك⁸ العليل بالوجع فيه⁹ وكية فوق العرقوب بأربع أصابع الى¹⁵ الجهة الوحشية قليلا وتكون المكواة سگينية ويكون عمق الكية على قدر ثخن الجلد فقط، وإن أشار الى أن الوجع يمتد الى نحو اصابع الرجل فاكوه حيث أشار عليك¹⁰ بمكواة النقطة ثلاثا او اربعا او أكثر إن احتاج الى ذلك، وإن أشار بالوجع¹¹ تحت الركبة نحو الساق فاكوه هناك كية واحدة سگينية وتحفظ فى جميع كيك من أن تبلغ بالكى²⁰ الى أن تحرق عصبا او شريانا عظيما فتحدث بذلك على العليل آفة رديئة او زمائة¹² وقد شاهدت واحدا وثانيا ممن كوى فوق العرقوب وبلغ فى الكى فتزخم الساق حتى بلغ الزكام القدم وتثقب كله وفسد جميع الرجل ثم حدث الإسهال والموت بعد ذلك، فإن كان الوجع²⁵ فى الجهتين جميعا كويتهما على هذه الصفة بعينها،

وقد ذكر بعض¹³ العلماء من الحكماء¹⁴ فى كى الورك كيا هذه صفته يصنع شبه القدح من حديد ويكون قطره نصف شبر ويكون¹⁴ عند فمه¹⁴ على غلظ نواة التمر¹⁵ او اقل قليلا وفى داخل ذلك القدح قدح آخر وقدح

6. om. P. 7. om. AH.

8. BP, الىه H, اليك cett. 9. P, om. cett. 10. om. B,

H. ازمائة, B. زمانية. 12. الى ان الوجع. 11. اليك cett.

التمر. 15. HP. فيه A, فمه. 14. cett. الحكماء, V. العلماء. 13. P,

ABV.

and there is a distance between the bowls of a thumb-joint. The bowls are open on both sides; and the depth of them should be a thumb-joint or two. Make an iron handle for them firmly fitted to the bowls. Here is the figure (fig. 31). Then heat this cautery in the fire until it is hot and sends out sparks; and so let it be applied to the hip, the patient lying on his sound side; and thus three circular cauterizations will be produced at a time. Afterwards let it be for three days; then smear with butter and leave the wound open for a while; then treat with ointment till it heals. The author of this book says that we very rarely employ this method of cauterization on account of the ugliness and dread appearance of it, and because we find few patients who will endure it. Nevertheless, it is one of the best cauteries for him who can endure it and is correctly treated by it.

ثالث ويكون بعد ما بين كل قدحين بقدر عقد¹⁶ الإبهام ويكون الأقداح
 30 مفتوحة من الجهتين ويكون ارتفاعها نحو عقد¹⁷ او عقدين¹⁸ وتتخذ لها
 مقبضا من حديد قد أحكم في الأقداح وهذه صورته :

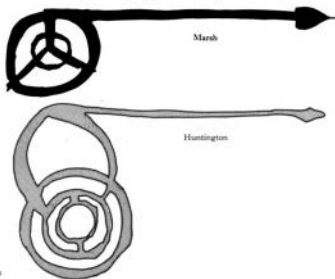


Fig. 31

ثم تحمى في النار حتى تحمر وترمى الشرر ثم توضع على حلق
 الورك والعليل منكى على الجانب الصحيح فتكويه ثلاث كيات مستديرة
 في مرة واحدة ثم تتركه ثلاثة أيام وتضعده بالسمن وتترك الجرح مفتوحا
 35 أياما كثيرة ثم تعالجه بالمرهم حتى يبرأ قال واضع هذا الكتاب
 هذا النوع من الكى قلما استعملناه لشناعته وهول منظره ولقلته من
 نجد ممن يصبر عليه إلا أنه من جيد الكى لمن صبر عليه وأصيب به
 موضعه ،

16. H. عقدة. 17. H. عقدة. 18. AH. عقدتين. 19. AS. من MPV, om. B.

Cauterization with caustics is thus: make two bowls like the ring into which a door-hinge descends,¹ either of bronze or iron. The height of their sides should be two thumb-joints or thereabouts, and they should be separated about a finger's breadth; they should be open above and below, and joined one to another thus (fig. 32). Then place them over the capsule of the hip joint, the patient lying upon his sound side, and press down hard; then pour caustic fluid between the two rings—it should have been heated slightly—and keep it there for the space of one hour by the sand-clock. The patient must endure the sting and heat of it (for he will find it stings like fire) till the causticity diminishes. Then remove your hand with the instrument and wash away the caustic from the whole capsule with pure water. Let be for three days and apply butter to it till the eschar comes away; and let the pus flow from it for a few days, for that will be more

¹ i.e., like the metal-lined hole in the threshold, in which the peg of the hinge turns.

وأما الكتي بالأدوية المحرقة فهو أن تصنع قدحين شبه الحلق
 40 التي يشل فيها رتاج الباب من نحاس أو من حديد يكون في
 حاشيتهما ارتفاع²⁰ قدر عقدين أو نحوهما ويكون بعد ما بينهما قدر
 غلط الأصبع وتكون مفتوحة الأسفل مفتوحة الأعلى ويكون قد سككت
 بعضها ببعض على هذه الصورة:



Fig. 30

Marsh



Huntington

ثم تنزلها على حق الورك والعليل ضطجع على جنبه الصحيح
 45 وتنم يدك نعماً ثم تصب بين الدائرتين من الماء الحاد²¹ وهو
 مدفاً بالنار قليلاً²² وتسكه قدر ساعة رملية²³ ويصير العليل على لذعه
 وحرقته فإنه يجد لذعا كالنار حتى يبدأ اللذع ثم ترفع يدك بالآلة
 وتسمح الماء الحاد عن الورك كله بالماء العذب ثم تتركه ثلاثة أيام
 وتحمل عليه السمن حتى يذهب سواد الحرق وتتركه أياماً يجرى منه

ارتفاعها، HP، في ارتفاعها طول حايطها، B، ارتفاعها، MV، 20.

S. ارتفاعها طول حايطها في A، طول حايطها في

M. من النار وهو مدني، A، وهو مرئياً بالنار، P، المسخن بالنار، 21.

22. om. P. 23. رملية، M، رملية، H، om. 22.

conducive to healing. Then treat with ointment till it heals. If the pain extends to the hip joint or the leg, make a form in some material that will hold the fluid for that, just as you did for the capsule of the femur.

Now this is the description of the caustic; I have already put it in my treatise on the improvement of drugs:¹ take of the salt of potash and quicklime,² equal parts, and beat them both up well and put them into a new earthen pot, in the bottom of which you have made a small hole of a size to take a probe. Place under that pot another one, glazed. Pour enough water on the quicklime and potash to cover them to a finger's breadth after you have pressed them well together with your hand; and leave the pot until the caustic fluid has passed down into the bottom of the glazed pot. Then collect all that fluid and pour it upon a fresh lot of lime and potash. Thus will the water be very caustic indeed. This is used for many medical procedures and for the cauterization of all members, as it has the very same action as fire itself. There are other drugs too with which the capsule of the femur is cauterized, such as Thapsia and Mel Anacardinum and inunction of lime with soap.

Galen, quoting one of the men of old, mentions a treatment for pain in the thigh and sciatica and he makes much of it, asserting that no other treatment was necessary, and that it would heal on one application, so much so that the patient would be carried into the bath and would go out completely

¹ Treatise No. 28.

² P adds 'or of ashes of origanum and ashes of vine'.

50 القيق فإنه أبلغ في النفع ثم تعالجه بالمراهم حتى يبرأ ، فإن امتد
الوجع الى الفخذ او الساق صنعت له قالبا فيما يمسك الماء على
حسب ما صنعت بالورك سواء ،

وهذه صفة الماء الحاد وقد أثبتته في مقالة إصلاح الأدوية ،
تأخذ من ملح القلى ومن الجير غير مطفاً²⁴ من كل واحد جـزاً
55 فتسحقهما وتضعهما في قدر جديدة قد ثقت أسفلها ثقبه واحدة
صغيرة على قدر ما يدخلها المروود وتضع تحت قاع القدر قدرا أخرى
مزججة وتلقى على القلى والجير من الماء العذب ما يغمرها بأصبع
بعد أن تزعمها بيدك زماً جيّدا وتترك القدر حتى ينزل الماء الحاد
في أسفل القدر المزججة ثم تجمع ذلك الماء كله ثم تلقيه على جير
60 آخر وقلى آخر مجددين ايضاً²⁵ فإنه يكون حينئذ قوى الحدة جداً
يتصرف في كثير من أعمال الطب وفي كثر سائر الأعضاء لأنه يفعل
فعل النار بعينها ، ومن الأدوية ما يكوى بها الورك²⁶ ايضاً مثل
الثافسيا²⁷ وعسل البلاذر والجير مع الصابون مبروخين²⁸ ،

وزعم جالينوس حكاية عن رجل من القدماء علاجاً لوجع الورك
65 وعرق النساء وعظم أمره جداً وزعم أنه لا يحتاج الى غيره من العلاج
وأنه يبرى من مرة واحدة حتى أنه ربما أدخل²⁹ الحمام محمولا³⁰ وخرج

24. <وتتركه حتى . 25. P. > او من رماد المرو ومن رماد الكرم < . 24.

B. ينزل الماء ثم تلقيه على جير آخر وقلى آخر مجددين ايضاً <

P. النارلسا , M. الافسيا , B. التافسيا A. التابسيا . 27. 26. om. P.

28. cett. ممزوجين , V, M s. p. , مبروجين . 29. BHMS. دخل . 30. an

leg. مخمولا ?

cured. The method is as follows: take fresh green water-cress or new dry water-cress if fresh is not to be had; beat it up well with some fat and apply it to the hip where it hurts, or to the leg or thigh, and bind up. Then let be for three hours or until the patient feels a diminishing of the caustic; and then let him be taken to the bath. When his body is bedewed with sweat, get him into the pool; then the pain will vanish and he will be cured. If he is not cured repeat the plaster in ten days' time and then he will be healed. But you must know that no one should have cauterization with these drugs except after evacuation of the bowel.

Dioscorides has said that cauterization with goats' dung is beneficial for sciatica. The cauterization is carried out in this manner: take wool soaked in old oil and put it into the cleft which is between the thumb and the forearm but nearer to the forearm. Then take the dried dung of a goat and expose it to fire until it glows like a coal. Place it on the piece of wool, and leave till it cools, then replace it with another, and so on until the sensation has reached the hip joint by way of the forearm, and the pain stops. This kind of cautery is called 'the dung cautery'.

منه قد برئ وهو أن يؤخذ من الشيطرح الأخضر فإن لم يوجد
الأخضر فيؤخذ اليابس الحديث فينعم دقه مع شئ من شحم ويوضع
على الورك حيث الوجع أو في الساق أو في الفخذ وتشد وتترك
70 قدر ثلاث ساعات أو بقدر ما يحس العليل بسكون الحرقه ثم أدخله
الحمام فإذا ندى بدنه فأدخله الحوض فإن الوجع يذهب ويبرأ بإذن
الله، فإن لم يبرأ فأعد عليه الضماد بعد عشرة أيام مرة أخرى فإنه
يبرأ إن شاء الله، واعلم أنه لا ينبغي أن يستعمل أحد الكلى
بهذه الأدوية إلا بعد است فراغ البدن،

75 وقد ذكر دياسقوريدس³¹ أن بعير الملعز إذا كوى به عرق النسا نفع
منه ويكون الكلى على هذه الصفة، يؤخذ صوف³² فيشرب في الزيت
العتيق ويوضع على المكان العميق³³ الذي فيما بين الإبهام³⁴ من³⁵ اليد
وبين³⁵ الزند وهو إلى الزند أقرب ثم خذ بعرة ماعز جافة فألهبها
بالنار حتى تصير جمرة ثم ضعها على الصوف واتركها حتى تطفأ ثم
80 خذ غيرها فلا تزال تفعل ذلك إلى أن يصل الحس³⁶ بتوسط العضد³⁷
إلى الورك ويسكن الوجع بإذن الله³⁸ وهذا الضرب من الكلى يسمى
الكلى البعري³⁸،

31. M, A, B, دياسقوريدوس, P, اسقريدوس,

32. B. <منفوش> 33. M. <من الزند> 34. D cett. دياسقوريدوس

A. الحر. 36. P. اليدين وبين, B. الرجل وفيما بين. 35. P. الإبهامين

37. codd. العضل. 38. om. H.

CHAPTER FORTY-TWO. On cauterization for pain in the back.

Many different causes give pain in the back. Sometimes it happens from a fall or a blow, or from excessive evacuation or the like. It may also be due to an influx of humid matter. Cauterization is only to be employed in this last case, which arises from an influx of cold matter. When the patient has been purged with foetid pills or the like, he should be cauterized in his back where the pain is, over the breadth of the flat of the back, after the place has been marked with ink, with three rows of cauterizations, five in each, or more, in proportion to what you see of the patient's endurance and strength. Use the punctate cautery. If you like, you may give him three or four cauterizations with the middle-sized claviform cautery (fig. 33).

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The bolt-shaped cautery so often recommended has already been shown, in chapter 3. This seems to be a slenderer variety, and the angled piece of the 'bolt' is not provided with a knob or thickening in the middle as in the Huntington sketch in chapter 3. This does not seem to be the classical treatment for lumbago.

الفصل الثانى والأربعون فى كتى وجع الظهر

قد يعرض الوجع فى الظهر من أسباب كثيرة إما عن سقطة او ضربة¹ او استفراغ مفرط ونحو ذلك ويكون من انصباب مائة باردة رطبة والكى إنما يقع فى هذا الصنف وحده الذى يكون من انصباب مائة باردة فينبغى بعد استفراغ العليل بحب المنتن ونحوه أن يكوى على ظهره حيث الوجع ثلاثة صفوف على عرض المائدة نفسها بعد أن تعلم الموضع² بالعداد فى كل صف خمس كيات او أكثر على قدر ما ترى من احتمال العليل وقوته ويكون الكى بمكواة النقطة وإن شئت كويته ثلاث كيات او أربعاً بمكواة مسمارية متوسطة على هذه الصورة :

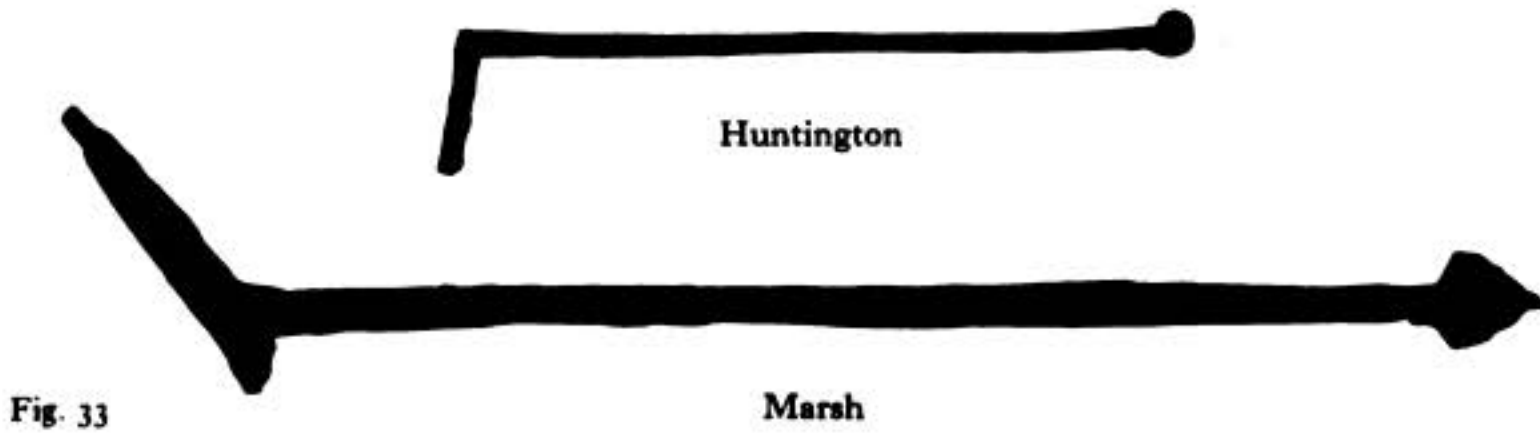


Fig. 33

1. صدمة B. 2. HP. المواضع.

CHAPTER FORTY-THREE. On cauterization of early hunchback.

This disease often occurs in small children. The sign of the beginning of the disease in a child is that he suffers shortness of breath when standing or moving, and you will find that at the end of his dorsal vertebrae there is one visibly projecting above the other vertebrae. So when you see this and you wish to stop it, cauterize him with a cautery that should be circular (as fig. 34) so that the cauterization takes in equally all sides of the vertebra. If you wish, you can cauterize two or three lines around the vertebra with the punctate cautery; let the punctures be close to one another. Then dress the place with those remedies we have mentioned, till healed. But beware of using the cautery in the deformity arising from a nervous spasm.

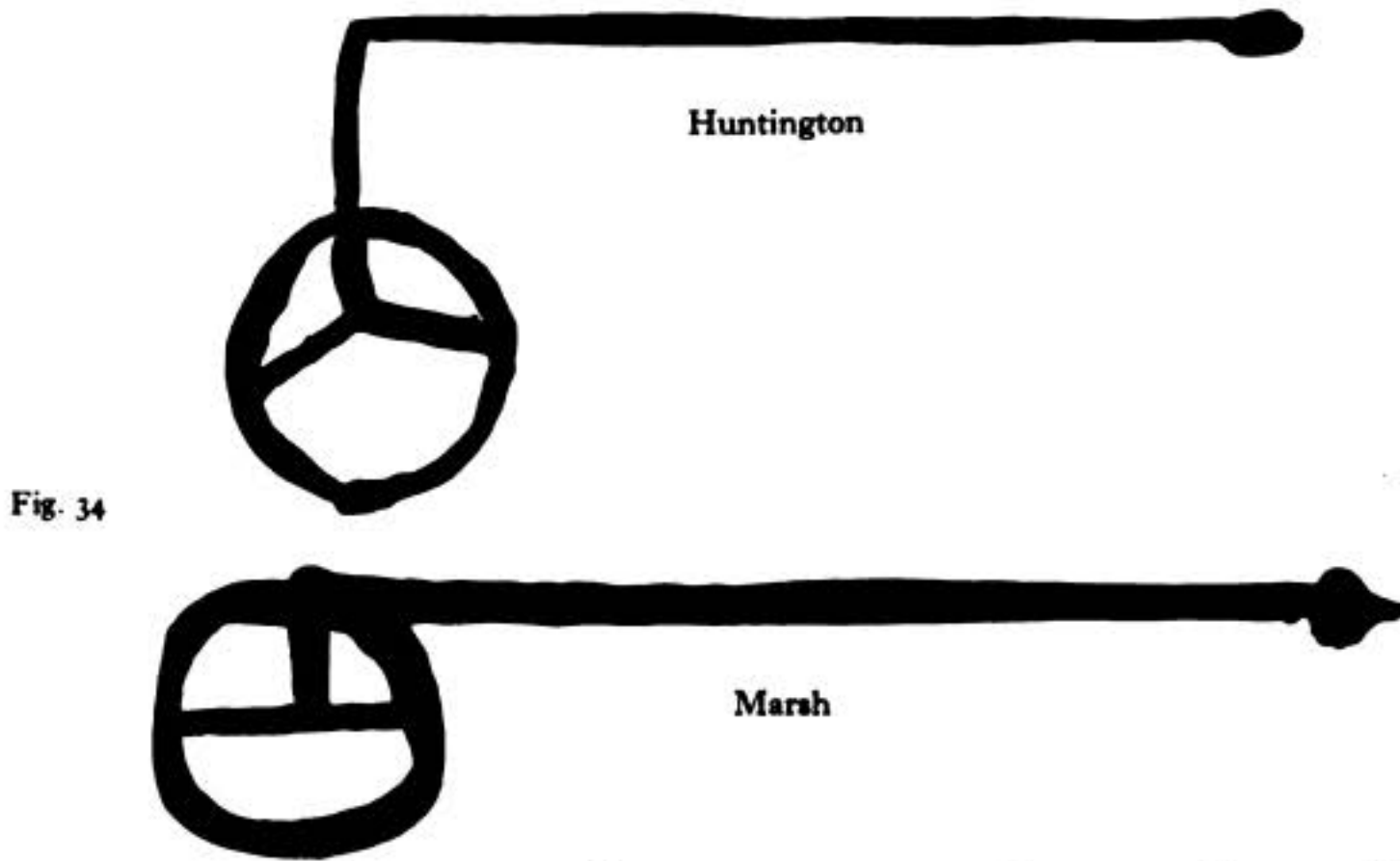
BOOK ONE. CHAPTER FORTY-THREE

Both instrument and manner of treatment for this disorder—spinal caries as it seems—are peculiar to Albucasis. The ring cautery is like that described for sciatica but is much

smaller and less elaborate in both MSS. It is shown as having only one ring fixed to the shaft, as before, by a kind of bucket handle.

الفصل الثالث والأربعون في كتي ابتداء الحدة

كثيرا ما تعرض¹ هذه العلة للأطفال الصغار علامة ابتدائها في
الطفل² أن يحدث عليه ضيق³ النفس عند القيام والحركة وتجد في آخر⁴
فقارات ظهره⁵ خرزة قد برزت⁶ تنتو على سائر الخرزات فإذا رأيت ذلك
s وأردت توقيفها⁷ فاكوه بمكواة تكون دائرة على هذه الصورة:



لتأخذ الكية على كل جهة من الفقارة⁸ باستوا⁹ وإن شئت كويته
حول الفقارة بمكواة النقطة صفين أو ثلاثة ولتكن النقط قريبة بعضها
من بعض ثم تعالج الموضع¹⁰ حتى يبرأ بما ذكرنا⁹ وتحفظ أن تستعمل
الكتي في الحدة التي تكون من تشنج العصب¹⁰

1. MV احد 4. H. <في> 3. cett. الاطفال B, 2. ABMV. تحدث 1.
5. P, الظهر 5. B, توقيفها 7. cett. بدت V, بدت AP, 6. H. ظهورهم P, الظهر 5.
8. P. الفقارات B, الفقار 8. V. ترفيعها P, ترفيعها 9. كما ذكرنا حتى 9.
10. H. العصبه والله اعلم 10. M. يبرأ

CHAPTER FORTY-FOUR. On cauterization of gout and pain in the joints.

When there are pains in the joints from cold humidities flowing into whatever part of the body it may be, and specially when there are pains in the feet, doctors are in the habit of calling that 'gout'. When gout due to chill has been treated with the various treatments mentioned in its section, and the pains remain, the cautery will remove them. That is, you cauterize the patient with multiple burns around the joint of the foot, after he has been purged. The cautery should be a middle-sized olivary one, thus (fig. 35). If you need to make punctate cauterizations round the front of the foot, use the punctate cautery; and if the pains go up to the knee or other joints, which often happens, burn each knee with three or four cauterizations on every side with the same olivary cautery. And if you require to cauterize him more than this, do it, but do not go deeply but only about the thickness of the skin. If the pains go up to the hip joints or the back, employ those

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Gout is to be treated with multiple burns with the olivary cautery. Huntington has one of the large size in chapter 1; this one is similar but smaller, and with the head of the true olivary shape set at an angle to the shaft

(fig. 35). Neither instrument nor treatment seems to have been described before; but Celsus says that long-continued pain in the knee can scarcely be cured except with the actual cautery (iv. 23).

الفصل الرابع والأربعون فى كى النقرس وأوجاع المفاصل

إذا كانت أوجاع المفاصل عن رطوبات باردة تنصب إلى أى عضو كان من الجسم فإذا حدثت الأوجاع فى الرجلين فمن عادة الأطباء أن يسموا ذلك نقرسا خاصة، فإذا عولج النقرس البارد السبب بضروب العلاج¹ الذى ذكرنا فى التقسيم² ولم تذهب الأوجاع فإن الكى يذهب بها وهو أن تكويه بعد الاستفراغ حول³ مفصل الرجلين⁴ كسيات كثيرة وتكون المكواة زيتونية متوسطة على هذه الصورة:



Fig. 35

وإن احتجت أن تنقظ على⁵ وجه الرجل فافعل بمكواة النقطة، فإن صعدت الأوجاع إلى الركبتين أو إلى سائر المفاصل وكثيرا ما يعرض ذلك فاكوه على⁶ كل ركة⁴ ثلاث كيات⁵ أو اربعا⁵ من كل جهة بهذه المكواة الزيتونية بعينها، فإن احوجت إلى أكثر من هذا الكى فاكوه ولا تعمق يدك بالكى بل يكون نحو ثخن الجلد فقط، فإن صعدت الأوجاع إلى الوركين⁶ أو إلى الظهر⁶ فاستعمل ما ذكرنا من الكى فى

1. PS, H, om. cett. 2. codd. 3. om. M, H. 4. BV, P, ركبه, M, A s. p., H s. p. 5. H, أربع, P, cett. 6. P, والظهر, cett.

cauterizations that we have mentioned in their own chapter. And if the pains are in the hands only, pierce a double line all around the wrists. If the pains remain in the fingers, pierce them once over each joint and once on the metacarpus. And if after some days the pains go up to the elbows or shoulders then cauterize both on each side. And keep the patient to good habits and taking of medicine; for if his regimen be good and the phlegm got rid of, he will be cured with this cautery.

بابه، فإن كانت الأوجاع في اليدين فقط فننقط حول الزندين كما
¹⁵ تدور صفين، فإن "بقيت الأوجاع"⁷ في الأصابع فننقطها على كل عقدة
نقطة⁸ "وعلى مشط اليد"⁹، فإن سعدت الأوجاع بعد أيام إلى المرفقين¹⁰
أو إلى المنكبين¹⁰ فاكوهما من كل جهة ولا يخلُ العليل من التدبير
الجيد وأخذ الأدوية فإنه إن أحسن الغذاء¹¹ واستفرغ البلغم فإنه
يبرأ¹² مع هذا الكي¹³ إن شاء الله،

cett. بقيت من الاوجاع M, بقى من الاوجاع شى, PV, 7.

8. om. AHP. 9. om. H. 10. om. M.

B. العلاج. 13. P. <سريع>. 12. cett. التدبير, P, 11.

CHAPTER FORTY-FIVE. On the cauterization of hernia.

When a rupture occurs in the groin, and part of the intestine and omentum comes down into the scrotum, being the onset of the disease, forbid the patient to take food for one day and have him use laxatives to empty the bowel. Then let him lie on his back in front of you and bid him hold his breath till the intestine or omentum comes out; then put it back with your finger. Then, below the hernia over the pubic bone, mark a semi-circle whose extremities point upward. Then heat a cautery of this type (fig. 36). When it is white hot and emits sparks then return the intestine or omentum into his abdominal cavity, and have an assistant put his hand over the place to prevent the exit of the intestine. You should first have parted his legs and put a pillow under him; let another assistant sit on his legs and another on his chest, holding his hands. Then apply the cautery to the mark, keeping the cautery upright, and hold it till it reaches the bone; or apply the cautery again a second time if it does not reach the bone the first time.

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Celsus was the first to give a description, on these lines, of ruptures (VII. 20, 21). (See also later note to chapters 65 and 67 of Book II.) Cauterization seems to have come into favour a good deal later in the development of surgery under the Roman emperors; Paulus Aegineta says that burning is preferred by most moderns, and gives a description of *ἡλωτοί* (nail-shaped), *γαμμοειδεῖς* (gamma-shaped), and *φακωτοί* (lenticular) cauteries for this method of radical cure. The irons proposed in this chapter do not, however,

correspond to any of these types; though the second cautery he shows (fig. 37) he speaks of as having been used by the Ancients; possibly it was a kind of gamma-shaped cautery; its usefulness is not clear. It seems to be a kind of probe cautery with a cross-piece, for safety's sake, to prevent sinking in too far. The first instrument (fig. 36) was shaped to adapt itself to the roundness of the abdomen at the site of the rupture; and the result was to be a strong cicatrization below the rupture.

الفصل الخامس والأربعون فى كى الفتوق

إذا عرض فتق فى الأريّة¹ وانحدر بعض المعاء² والشرب الى الخصية
وكان ذلك مبتدئا قريبا فينبغى أن تأمر العليل بترك الأكل يومه³
وأن يستعمل من المليّنات ما يحدر³ به⁴ البراز⁵ عن جوفه⁶ ثم يضطجع
بين يديك على ظهره وتأمره أن يمسك نفسه حتى يبرز الشرب او
المعاء⁷ ثم ترده بأصبعك ثم⁷ تعلم بالمداد تحت الفتق على عظم العانة
علامة تشبه نصف الدائرة أطرافها الى أعلى البدن ثم تحمى مكواة
هذه صورتها :



Fig. 36

حتى تأتى بيضا⁸ ترمى الشرر ثم ترده المعاء⁹ او الشرب⁸ الى جوفه
ثم يضع خادم يده على الموضع لئلا يبرز المعاء¹⁰ وقد فرجت بين ساقى
العليل ووضعت تحته وسادة وخادم آخر يعقد على ساقيه وآخر على
صدره يمسك يديه ثم تنزل المكواة على العلامة نفسها ويدك بالمكواة
واقفة مستقيمة وتمسكها حتى تبلغ بها العظم⁹ او تعيدها⁹ مرة أخرى إن

1. AB, SV s. p., الأريّة MP, الأريّة H. 2. عند نومه B. 3. سحدر
4. منها BMPV, بها BP. 5. النفل H. 6. حقوقه M. 7. P,
او بغيرها B, وتعيدها A, وتغيرها 9. BMV <بيدك> 8. cett. و
V. او غيرها H.

You must take the greatest care that the intestine does not come out while you are cauterizing, lest you burn it and it result in death or grave injury to the patient. You must understand that if you do not bring the cauterization down to the bone your operation will not be successful.

For boys the cautery should be slender according to their proportions, and for adults according to theirs. Then dress the site of the cauterization till it heals. After three days, treat the site of cauterization with butter until the eschar from the burn departs. Then treat with the usual ointments till healed. The patient should lie on his back for forty days so that the wound may cicatrize. Throughout the course of his treatment you must make his diet such as will be gentle with his inside, so that the intestine should not come down during the effort of defaecation. Then when he wants to get up after the forty days, employ a tight bandage and keep this on another forty days. He should be moderate in his exertion, his eating, drinking, and shouting. Thus under these rules he will be completely cured. I shall speak of the treatment of rupture by scission in the appropriate chapter.

When a rupture occurs elsewhere in the belly and is at its inception

لم تبلغ بالأولى¹⁰ الى العظم وتحفظ جهدك من بروز¹¹ المعاء في حين
 15 كيك لثلا تحرقه فيحدث بذلك على العليل إثم الموت وإثم بليّة
 عظيمة، واعلم أنك متى لم تبلغ بالكى العظم لم¹² ينجح عملك،
 وينبغي أن تكون مكواة الصبيان لطيفة على أقدارهم ولل كبار¹³ على
 أقدارهم، ثمّ تعالج موضع الكى بعد ثلاثة أيام بالسمن حتى تذهب
 خشكشة النار ثمّ تعالجه بسائر المراهم حتى يبرأ وليكن العليل
 20 مضطجعا على ظهره أربعين يوما حتى ينختم¹⁴ الجرح، وينبغي أن
 تجعل غذاءه¹⁵ مدة علاجه ما يلين بطنه لثلا يبرز المعاء عند التزجر
 والتبرز ثمّ اذا أراد القيام بعد الأربعين يوما فتستعمل رباطا محكما
 وتمسكه أربعين يوما آخر ويقل من التعب والامتلاء من الطعام
 والشراب والصياح الشديد فإنه اذا استعمل هذا التدبير هكذا برئ
 25 بروزا تاما إن شاء الله،¹⁶ وسأذكر علاج الفتوق بالشق في بابه إن
 شاء الله¹⁶

وأما الفتق¹⁷ الذى يحدث في سائر البطن وكان مبتدئا فإن¹⁸ أردت

cett. بها في الاول BM, بها في الاولى P, 10.

H. مكواة الكبار, BM, والكبار 13. 12. om. A. 11. M. نزول.

14. AV, يحتم M, يلتحم cett. 15. <طول> AHMV. 16. om. H.

cett. و P, 19. cett. التى AP, 18. codd. الفتوق 17.

and you wish it not to grow, cauterize the rupture with a round cautery in proportion to its size; burn about two-thirds through the thickness of the skin and treat as we have said; he will be cured and the rupture will not grow. One of the Ancients said that ruptures were to be cauterized with a three-armed cautery like this (fig. 37). First mark the rupture with ink; put the transverse line on the upper margin of the rupture and the other towards the lower, and apply a single claviform cautery in the middle. But the first cauterization is easier and better.

أن لا يزيد فاكو الفتق²⁰ منه كمية مستديرة على قدره وليكن ما تحرق
من الجلد مثل ثلثيه²¹ ثم عالجه بما ذكرنا فإنه²² لا يزيد إن شاء الله،
وقد ذكر بعض الأوائل أن يكوى الفتق بمكواة مثلثة على هذه الصورة: 30

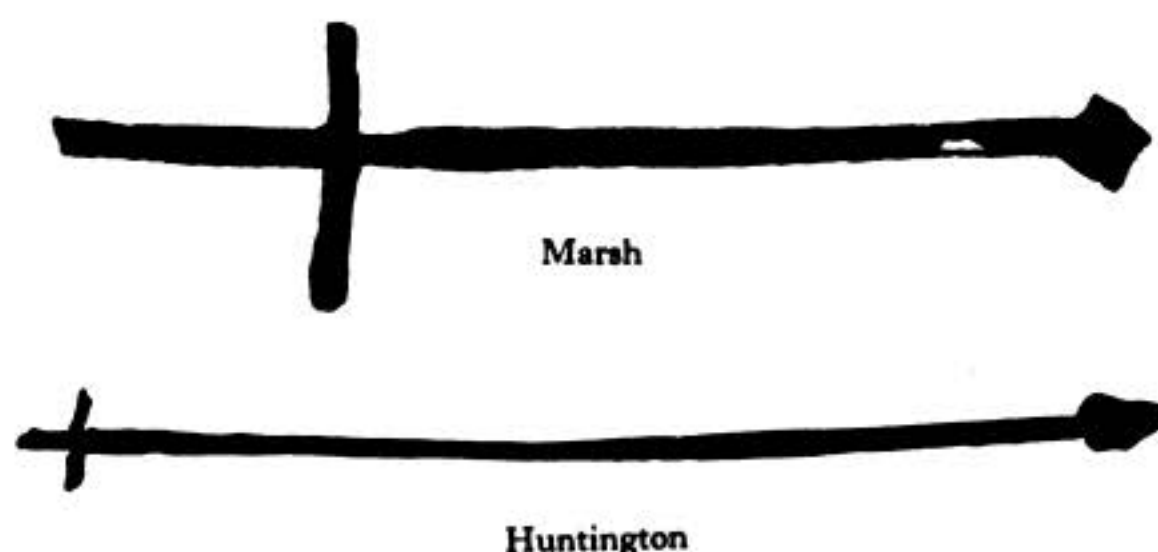


Fig. 37

Huntington

بعد أن تعلم على الفتق بالمداد وتصير الخط الذي بالعرض
في الجانب الأعلى من الفتق والخط الآخر إلى أسفل وتنزل²³ يـدك
في الوسط بكمية واحدة مسماوية والكى الأول أسهل وأفضل إن شاء
الله،

20. A. العنق. 21. P. ثلثه. 22. H. <يبراً>. 23. ABV², cett. وتترك.

CHAPTER FORTY-SIX. On cauterization for contusion.

When pain occurs in some limb due to a fall or a blow and the pain becomes chronic and medical treatment has no effect upon it, you should cauterize it with the punctate cautery. In each case the cauterization should be in proportion to the size of the limb, its strength or weakness, and the chronicity of the pain and contusion in it. If it is cured at the first cauterization, good; otherwise repeat the cauterization. For it is customary for these pains to move from one part to a neighbouring part, and you must follow them with the cautery till the patient is cured.

الفصل السادس والأربعون فى كَوَى الوثى

إذا حدث فى بعض الأعضاء عن سقطة أو ضربة وجع ودام ذلك
الوجع زمانا طويلا ولم ينجع فيه العلاج بالأدوية فينبغى أن يكوى
بمكواة النقطة ويكون كَوَى كل عضو على حسب كبره وصغره وضعفه وقوته
5 وتمكن الوجع والوثى منه فإن برئ من الكوى الأول وإلا فتعيد عليه
الكوى لأن من عادة هذه الأوجاع أن تنتقل من العضو¹ الى² ما قرب²
منه فينبغى أن تتبعها بالكوى حتى يبرأ العليل،

1. ABV, cett. عضو. 2. M. عضو قريب.

CHAPTER FORTY-SEVEN. On cauterization for elephantiasis.

Those suffering from elephantiasis are sometimes greatly helped by the cautery; especially that kind that arises from corruption of the phlegm and black bile. When you wish to use the cautery, first look, and if the elephantiasis be in the early stage and you treat it with those remedies advised in the section but it does not abate and is not arrested, and you fear lest the corruption spread over the patient's whole constitution, then give him five cauterizations on the head: the well-known one in the middle of the head; the second one lower than that, toward the forehead, about the edge of the hair; and two at the temples; and one behind, on the nape of the neck. And maintain the application of the cautery a little while till a slight mark is impressed on the bone and the outer table is removed from it, that there be an easy exit for the thick vapours. Burn him also one cauterization over the spleen itself in the manner described earlier. If the elephantiasis be widespread over the patient and appears obvious, you should give him, as well as the cauterizations described for the head: one at the end of the nose; two over the cheek bones; two over the cervical vertebrae; six over the dorsal vertebrae; a great one over the coccyx by the last vertebra of the tail; another above that on the flat of the back; two over the hip joints, one on either hip; two on the knees, one on either knee; two over the shoulders;

BOOK ONE. CHAPTER FORTY-SEVEN

Paulus Aegineta (iv. 1) says that burning the head has prevented the spread of the early stage of elephantiasis, but does not mention the type of cautery nor the sites of application. Leo (ninth century A.D.) recommended burning at the bregma. Other Arabian writers such as Avicenna and Rhazes follow the later Greek writers both in their descriptions and in their directions for treatment, including the cautery described in this chapter. There is no doubt, however, that the Arab writers paid far more attention to this

disorder, called *elephas* or leprosy, than the classical authors. It appeared in the writings of these as early as Lucretius, who attributed it to Egypt; and others such as Pliny speak of it as an imported and transient disease. Avicenna distinguishes from the true 'lepra' the gross enlargement of a limb which now goes by the name of elephantiasis; Albucasis devotes the next chapter to this. It seems from the directions here given that the type of cautery used was immaterial provided a sufficient number of burns was given.

الفصل السابع والأربعون في كَيّ الجذام

أما المجدومون فقد ينتفعون بالكَيّ نفعا عظيما ولا سيما صنف
الجدام الذي يكون من قبل تعفن البلغم والسوداء فإذا أردت كَيّ
نظرت فإن كان الجذام مبتدئا وعالجته بما ذكرنا في التقسيم ولم
5 ينحط ولم يتوقف وخفت على العليل أن يستولى الفساد على جميع
مزاجه فأكوه على الرأس خمس كَيّات الواحدة في وسط¹ الرأس
المعشودة² والثانية أسفل منها نحو الجبهة عند نهاية الشعر واثنين
على القرنين وواحدة من خلف على نقرة القفا وأمعن يدك بالكَيّ قليلا
حتى يؤثر في العظم تأثيرا يسيرا وتنقلع³ منه قشور⁴ ليسهل تنفّس
10 البخارات⁵ الغليظة منها وتكويه كَيّة أيضا⁶ على نفس الطحال على ما
تقدم⁷، وأما إن⁸ كان الجذام قد استمر⁹ على العليل¹⁰ وظهر ظهورا
بيّنا فينبغي أن تكويه هذه الكَيّات التي ذكرنا في الرأس وكَيّة على
طرف الأنف وكَيّتين على الوجنتين وكَيّتين على فقرات العنق وستا على
فقرات الظهر وواحدة كبيرة على العصعص عند عجز¹¹ الذنب وأخرى
15 فوقها في نفس المائدة واثنين على الأوراك على كلّ ورك واحدة
واثنين على الركبتين واحدة على كلّ ركبة واثنين على المنكبين

1. V. قشرة. 2. P. وينقطع M, وتنقلع. 3. P. الشرايين المحدودة. 4. V. قشرة. 5. P. وينقطع M, وتنقلع. 6. P. الشرايين المحدودة. 7. H. اشتهر. 8. HS. وان. 9. BV, om. A. أخرى. 10. M. المواد. 11. V. عظم B, عجب P. 9. P. بالعليل. 8. V. اسهى BM, اشتهر APS, عجم cett.

two on the elbows; and two on the upper part of the breast; and burn him once on each joint of his fingers and toes, and on each ankle and on each forearm. Be careful not to burn the posterior tendons of his heels. He may also be cauterized once on the pubic bone; another on the cardia of the stomach; and another on the liver. You should know that the more you cauterize the more beneficial and effective it will be. You should know also that the patient will not find the cautery painful as a sound man would, since his body is benumbed. The cauteries should be of the types of instrument mentioned earlier, larger or smaller in proportion to the size of the limb or joint. Then treat the cauterization with powder of bitter vetch with honey, together with the other treatments, till healed.

واشتين على المرفقين واشتتين على ترائب¹⁰ الصدر وتكويه على كل مفصل
من مفاصل أصابع يديه ورجليه كية وعلى كل كعب من رجله وزندي
يديه وتحفظ من العصب الذي على مؤخر الكعبين لئلا تحرقهما¹¹ وقد
يكون كية على عظم العانة وأخرى على فم المعدة¹² وأخرى على الكبد¹²،
واعلم أنك كلما زدت كيا كان أنفع وأنجع، واعلم أن العليل لا يجد
للكتي وجعا كما يجده الصحيح من أجل أن بدنه قد خدر، وينبغي
أن تكون المكاوي من الكبر والصغر على حسب¹³ الأعضاء والمفاصل على
ما تقدم من صفات الحدائد، ثم عالج الكتي بدقيق الكرسة مع
العسل وسائر العلاج حتى يبرأ إن شاء الله تعالى،²⁵

AP, تحرقها. 11. H¹ in marg. جمع ترسه وهي عظم الصدر. 10.

BM. قدر. 13. P. om. 12. H. تحرقه.

CHAPTER FORTY-EIGHT. On cauterization for numbness.

When some limb is affected with numbness and it is treated with drugs and ointments and plasters, but is not cured, burn the benumbed limb itself with cauterizations proportionate to its bigness or smallness. Let the cauterization somewhat penetrate the thickness of the skin; then dress with ointments till healed. For numbness that occurs in the hand or foot it is possible to cauterize over the dorsal vertebrae at the exit of the nerve activating that part; and the numbness will go. This should not be attempted except by one who has a good knowledge of the anatomy of the limbs and of the exits of the nerves that move the body.

BOOK ONE. CHAPTER FORTY-EIGHT

This chapter deals with what may be true anaesthetic leprosy as described at the present day. Avicenna gave the first separate description of both disease and cure; and recommends bleeding and amputation as final resorts. Rhazes advises tight bandaging among other remedies. The shape of the cautery in this chapter is immaterial.

الفصل الثامن والأربعون فى كَى الخدر

متى خدر عضو من الأعضاء وعولج بالأدوية والأدهان والضمادات فلم يبرأ فأكو نفس العضو المنخدر بكَيَات على حسب ما يستحق عظم العضو أو صغره وليكن كَيك واغلا فى ثخن الجلد قليلا ثم تعالجه بالمرهم حتى يبرأ ، وقد يكوى لبعض الخدر الذى يعرض لليد والرجل فى فقارات الظهر عند مخرج العصب الذى يحرك ذلك العضو فيذهب الخدر ، ولا يقدم على ذلك إلا من كان بصيرا بتشريح الأعضاء ومخارج الأعصاب المحركة للبدن ،

CHAPTER FORTY-NINE. On cauterization for leprosy.

When leprosy is of long standing and no device of medicine has any effect upon it, make a cauterization over it to a slight depth according to the thickness of the skin, until the whiteness has gone and the colour of the skin altered. Then treat with lentil flour, oil of roses, arnoglossa leaves, and pigeons' or swallows' blood, of each equal parts mixed all together and spread on lint; let this stick to the place till healed.

BOOK ONE. CHAPTER FORTY-NINE

The affection spoken of here as *al-baraṣ* is carefully distinguished from the 'lepra' (*judhām*) of the last chapter but one. The word means white; so it is likely that what is referred to is the true nodular or tuberculous form of leprosy with the white patches that are common in this disease. Chapter 48 deals

with the anaesthetic form of the same disease. Paulus Aegineta (iv. 5) mentions cauterization as a remedy, but does not himself approve of it. As no type of iron is specified we may suppose the burning would be carried out with the olivary or bolt cautery.

الفصل التاسع والأربعون في كُتَي البرص

إذا تقدم البرص ولم ينجع فيه حيلة من حيل الطبِّ فأكو
عليه كُتًا فيه عمق قليلا على قدر ثخن الجلد حتّى يذهب البياض
ويتغيّر لونه ثمّ تعالجه بدقيق العدس مع دهن الورد وورق لسان
الحمل ودم الحمام أو دم الخطاطيف من كلّ واحد جزء ويخلط
الجميع ويطلّى على خرقة ويلبّس الموضع حتّى يبرأ،

CHAPTER FIFTY. On cauterization for cancer.

When the cancer is in its initial stage and you wish to arrest it, burn all round the circumference of the cancer with the circular cautery. Some doctors have said that it may be cauterized with one extensive cauterization in the middle. This hardly seems right to me, for I should expect it to ulcerate out; which I have several times seen. So it is correct to burn around the circumference with a circular cautery as we have said, or with multiple cauterizations.

BOOK ONE. CHAPTER FIFTY

The teaching in this chapter is clearly derived from the leading Greek writers with added experience of Albucasis' own. Theophilus, commenting on the aphorism (vi. 38) of Hippocrates, says that even if the disease is eradicated by cutting or burning many untoward things happen. Celsus (v. 28) and the other earlier surgeons of Roman times follow this opinion. But Leonides (1st century A.D., in Aetius XVI. 46) speaks approvingly of cauterizing: *supra cancrum partem mammae sanam incido, et incisam cauteriis inuro, donec crusta inducta sanguinis*

eruptio sistatur. Mox iterum incido . . . ac rursus partes incisas inuro . . . Saepe vero etiam circa inustionem opus perfeci, ubi induratus tumor cancri generationem minans in mamma fuit. Albucasis mentions the treatment by cautery but is unable to recommend it; this seems the more strange seeing the place that cauterization has at the present day in the treatment of carcinoma. His cautious consent to cauterization around the growth is not accompanied by instructions as to what iron to use.

الفصل الخمسون فى كَيْ السرطان

إذا كان السرطان مبتدئاً وأردت توقيفه فأكوه بمكواة الدائرة
حواليه كما تدور، وقد ذكر بعض الحكماء أن يكوى كَيْة بليغة فى
وسطه ولست أرى أنا ذلك لآتى أتوقع أن يتقرح وقد شاهدت ذلك
مرات فالصواب أن يكوى حواليه بدائرة كما قلنا أو بكيات كثيرة،

CHAPTER FIFTY-ONE. On cauterization of boils.

When a person gets a boil which is slow in coming to a head, either because of the superfluity causing it, or because of the patient's age if he be an elderly man lacking in blood, or because of the season, and you wish to hasten the ripening of the boil, then make a punctate burn around it with multiple small cauterizations, and then let be; it will speedily come to a head. If you wish to perforate it with cauterization, heat the cautery of this type (fig. 38).¹ Apply it to the middle of the boil till it has pierced the skin. The cauterization should go right to the bottom to facilitate the flow of pus. Then dress till cured.

¹ M, which omits the figure, reads 'heat the cautery which is in the form of a spike'.

BOOK ONE. CHAPTER FIFTY-ONE

The cautery illustrated in this chapter is not named. Its design is interesting; it has a small knob surmounting a fairly solid conical head. It is rather tempting to connect this iron with that spoken of by Hippocrates as *φαλακρόν*, interpreted by Galen as 'knobbed'. Paulus also recommends knobbed cauteries for use over the stomach (VI. 49). It is enough to name this the knobbed cautery. The expanding head seems designed to open up a free exit for the pus. Abscesses naturally occupy much space in the writings of the

Ancients; Celsus gave first the famous four signs of an inflammatory swelling: *Notae vero inflammationis sunt quattuor: rubor et tumor cum calore et dolore* (III. 10). He also recommended opening a ripe abscess with the cautery because such an opening remains open longer as a free outlet for the pus. He gives no description. Paulus Aegineta does not give any account of cauterization. Heliodorus mentions a knobbed cautery for the treatment of varicocoele. This knobbed cautery does not appear again in Albucasis.

الفصل الحادى والخمسون فى كى الدبيلة

اذا حدث بأحد دبيلة وقد أبطأت فى النضج إما من قبل الفضل
الفاعل لها وإما من قبل سنّ العليل اذا كان شيخاً قليل الدم وإما
من قبل الزمان وأردت أن تسرع فى نضج الدبيلة فاكو حواليتها بكيات
صغار كثيرة تنقيطاً ثم اتركها فإنها تسرع بالنضج فإن أردت بطئها
بالكى فاحم المكواة التى "هذه صورتها"

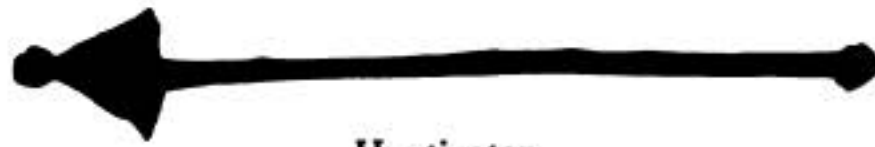


Fig. 38

Huntington

وأنزلها فى وسط الدبيلة حتى تنفذ الجلد ولتكن الكية² مما يلى
الأسفل¹ ليسهل جرى القيح ثم تعالجها³ بما ينبغى³ حتى تبرأ

ما يلى M, مما يلى السفلى 2. M. (deest fig.) هى على صورة الميل 1.
P. من اسفل, IV اسفل 3. om. P.

CHAPTER FIFTY-TWO. On cauterization of gangrene.

Gangrene is a creeping corruption of a limb, consuming it as fire consumes dry wood. If you see gangrene in a part which can tolerate the actual cautery, heat a number of claviform cauteries, small or large to suit the site of the gangrene. Then cauterize it all over till the whole corruption is eradicated and none remains. Then let be for three days, applying to the cauterized site sulphur beaten up with oil, until the whole eschar comes away, and all the corruption. Then treat with stimulating¹ ointments. If after three days you see the flesh growing healthily and no corruption in it, good. Otherwise repeat the cauterization over whatever corrupt parts are left. Gangrene is also sometimes cured with caustic, for that takes the place of fire; but the actual cautery acts more speedily. I have already spoken of the treatment of it by caustic in its section, so take it from there when you have need of it.

¹ Lit. 'ointments which make the flesh grow'.

BOOK ONE. CHAPTER FIFTY-TWO

Galen, commenting on Hippocrates, *Aphorisms* VII. 50, gives cauterization first place in the treatment of both γάγγραινα and σφάκελος. This was later copied by Oribasius, Paulus, and on down to Albucasis. Celsus also independently advocated it (v. 22) to-

gether with amputation in more advanced cases. It seems from the advocacy of the bolt cautery that Arabian practice was in the nature of surface application rather than a drastic removal of diseased tissue by the hot iron.

الفصل الثانى والخمسون فى كى الأكلة

الأكلة إنما هى فساد يسعى فى العضو فيأكله كما تأكل النار الحطب اليابس فإن رأيت الأكلة فى موضع يحتمل الكى بالنار فاحمى مكوى مسمارية كثيرة صغارا وكبارا على حسب ما يصلح لذلك الموضع ٥ الذى فيه الأكلة ثم اكوها من كل جهة حتى يستأصل الفساد كله ولا يبقى منه شئ البتة، ثم تتركه ثلاثة أيام وتحمل على المواضع المكوية الكبريت المسحوق مع^١ الزيت حتى تنقلع الخشكرشة كلها وجميع الفساد ثم تعالجه بالمراهم المنبثة للحم فإن رأيت بعد ثلاثة^٢ أيام أن اللحم ينبت نباتا صحيحا لا فساد فيه ولا فأعد الكى على ما بقى من ١٥ المواضع الفاسدة، وقد تعالج الأكلة بالدواء الحاد فإنه يقوم مقام الكى إلا أن الكى بالنار أسرع نفعا وقد ذكرت علاجها بالدواء الحاد فى التقسيم فتأخذه من هناك متى احتجت^٣ إليه،

١. MV. حوجت ٢. om. MV. ٣. H. فى ١.

CHAPTER FIFTY-THREE. On the cauterization of corns, inverted and otherwise.

This disease, which is something hard paining the foot, very often occurs in the soles of the feet. The cauterization in this case is twofold, actual or caustic.

The actual cautery is to heat a hollow cautery like a vulture's quill, made of iron, narrow of edge, of such a size as to surround the corn all round. Then put it, hot, on the corn and rotate it till the cautery reaches the root of the corn; and let be for three days to draw the pus; then apply a plaster of wild mallows ground up with salt, and leave the plaster on one night; then it may be drawn out with its root. Then treat the site of the wound with stimulating salve till it heals. If the corns are not inverted, which usually happens on the surface of the body and particularly on the hands and feet, you should take a cannula made of bronze or iron or made of a vulture's quill, and place it on the corn or wart; then pour into the cannula a small quantity of caustic solution; keep your hand on it and rotate it, keeping up a slight pressure so that the edge of the cannula impresses a mark at the root of the corn and the caustic makes its way to the root of the corn. Let the patient endure the action of the caustic for a while, then remove it; for the corn may be drawn out with its root. Treat them in this manner one after another till you have accounted for all of them. Then treat the site of them, after eradication, with stimulating ointments.

BOOK ONE. CHAPTER FIFTY-THREE

Galen (*Medicus* xix) advised cauterization for warts; and was followed by Paulus Aegineta (vi. 87). The operation was evidently to be carried out with plain irons. Albucasis now introduces a new method by using a quill cautery. This was a hollow iron tube with a sharp circular edge at one end. This, applied to the wart, would bore all round the wart to its root. The application of caustic fluid by means of a metal tube or quill was not new, as it was described by Paulus (loc.

cit.) for the same complaint. But the idea of using the tube as a boring instrument seems to be original; it will be remembered that a similar instrument was put forward with an illustration (fig. 12) as a means of treating a lachrymal fistula (see chapter 17). This quill cautery must, however, be distinguished from the cautery applied through a cannula such as is found in the chapters on toothache (chapters 20 and 21) and suggested in chapter 22 for scrofulous tumours.

الفصل الثالث والخمسون فى كى المسامير المعكوسة وغير المعكوسة
كثيرا ما تحدث فى اسافل القدمين¹ هذه العلة² وهى شىء³ خشن³
يؤلم الرجل ، والكى فيها على وجهين إما الكى بالنار وإما الكى بالماء⁴
الحاد فأما الكى بالنار فهو أن تحمى المكواة المجوفة الشبيهة بريش
5 النسر تصنع من حديد على قدر ما يحيط بالمسمار من كل جهة وتكون
رقيقة الحاشية ثم تنزلها حامية على المسمار⁵ ثم تدير يدك بالمكواة حول
المسمار⁶ حتى تصل المكواة الى عمق⁶ المسمار وتتركه ثلاثة أيام يسهم
بالقيح ثم تضمدها بالخبازى البرية المدقوقة بالطح وتترك الضماد عليها
ليلة فإنها تنقلع من أصولها ثم تعالج موضع الجرح بالمرهم المنسبت
10 للحم حتى يبرأ ، فإن كانت المسامير غير معكوسة وكثيرا ما تحدث فى
سطح البدن ولا سيما فى الأيدى والأرجل فينبغى أن تأخذ انبوبة
من نحاس او من حديد او من ريش النسر وتنزلها على المسمار او
الثلول ثم تلقى فى الأنبوبة من الماء الحاد قدرا يسيرا وتمسك يدك
وأنت تديرها مع غمز يدك قليلا لكى تؤثر حاشية الأنبوبة فى أصل
15 المسمار ويجد الماء الحاد السبيل الى الغوص الى أصل المسمار
ويصبر العليل قليلا على لدغ الماء الحاد ساعة ثم تتركه فإن المسمار
ينقلع بأصوله ، هكذا تفعل بها واحدة واحدة حتى تأتى على جميع
ما منها فى الجسم ثم تعالج مواضعها بعد أن تنقلع بما ينبت اللحم
من المراهم ،

بالدوا* BP, بالدوا* 4. P. شبه كسر. 3. H. om. 2. P. <من> 1.
V. اصل P, عنق 6. H. وتتركه 5. A. بالماء*

CHAPTER FIFTY-FOUR. On cauterization for tremor.

When someone has a tremor, either from chill in a nerve or quartan fever, or from some other cause, you should cauterize him four or five times over the vertebrae of the back, one between each vertebra, and one on his breast and one on his stomach, with an olivary cautery. Thus the tremor will be stilled and the dispersal of the cold distemper will be hastened.

BOOK ONE. CHAPTERS FIFTY-FOUR TO FIFTY-SIX

These remaining chapters in the book on cauterization do not put forward any new or interesting types of cautery. The olivary, often mentioned, is used for tremor. In the next chapter the 'lenticular' cautery is mentioned; it is not given elsewhere in Albucasis although it is given by Paulus Aegineta for hernia (see chapter 45). As it is spoken of in the same breath as the glowing spits of boxwood or aristolochy roots, it probably refers to the olivary iron. The last chapter gives a general dissertation on the use of the cautery as a haemostatic. This use was well understood in early times. Celsus was perhaps the first writer to give definite

advice to use it for this purpose: *Ubi ne id* [i.e. the ligature] *quidem res patitur, possunt ferro candenti aduri* (v. 26). Generally writers on the subject do not specify any particular type of iron for this; in this chapter, for example, Albucasis merely says that a variety of different-sized cauteries should be in readiness in case of haemorrhage. The use of the cautery in two capacities, namely, both cutting and haemostasis, appears in the use of the cutting cautery referred to by Galen (see comment on chapter 18) and perhaps in the passage from Leonides (see comment on chapter 50).

الفصل الرابع والخمسون في كَوّي النافض

إذا حدث بأحد نافض من برد في العصب أو من حمى ربع أو غير ذلك فينبغي أن تكويه أربع كَيّات أو خمسا على خرز الظهر بين كلّ خرزة¹ كَيّة وفي صدره كَيّة وعلى معدته كَيّة بالمكواة الزيتونيّة² فإنّ النافض يسكن ويسرع بنضج² المرض البارد ،

P. وينضج. 2. HP. خرزتين 1.

CHAPTER FIFTY-FIVE. On the cauterization of pustules occurring on the body.

Foul pustules sometimes arise on the body, caused by heavy corrupt frigid matter. When they first appear you should cauterize the head of each one lightly with myrtle wood whose tip has been lighted in the fire; or with the root of the long birthwort; or with the lenticular cautery. Sometimes furuncles also are cauterized in the same manner when they first arise; then they get no bigger and the superfluity originating them is dispersed and the patient is cured of them. But before you cauterize these, the patient must be depleted by bleeding.

الفصل الخامس والخمسون في كَوَى البشر الحادث في البدن
قد تندفع في البدن بشور قبيحة تكون عن مواد باردة غليظة
فاسدة فينبغي أول ظهورها أن تكوى على رأس كل بشرة كَيّة لطيفة
بعود آس قد أوقد طرفه بالنار أو بأصل الزراوند الطويل أو بمكواة
عدسية وقد تكوى الدمايل في أول اندفاعها على هذه الصفة فلا
يزيد ويتبدد الفضل الفاعل لها ويبرأ منها العليل إلا أنه ينبغي
أن يكون ذلك بعد است فراغ العليل بالفصد ،

CHAPTER FIFTY-SIX. On cauterization in haemorrhage arising from a cut artery.

Very often there occurs bleeding from an artery which has been cut either by an external wound or in opening an abscess or in cauterizing a part of the body and so on, and it is difficult to stem. When this happens to anyone, quickly apply your hand to the mouth of the artery, putting your forefinger to it and closing it properly till the bleeding ceases under your fingers and nothing comes out. Then put in the fire several olivary cauteries, small and large, and blow on them to make them very hot. Then take one, small or large according to the size of the wound and the site of the opening of the artery, and bring the cautery down right on the artery itself, after promptly removing your finger, and hold the cautery upon it till the blood ceases. But if it bursts out after you have removed your finger from the mouth of the artery, and the cautery has cooled, promptly take another of the cauteries which you have ready in the fire. Continue doing this, with one after another, till the haemorrhage is stanchd. Mind you do not burn any nerve which may be there, so that another calamity afflicts the patient. You should know that when there is arterial haemorrhage it is impossible to stop it, especially when the vessel is big, except in one of four ways, to wit: by the cautery as we have said; or by division of the vessel when it is not completely divided, for when it is cut through the ends of it contract and the bleeding is stopped; or by a strong thread ligature; or by the application of styptics with tight bandaging. But those who try to stop bleeding

الفصل السادس والخمسون فى كى النزف الحادث عند قطع الشريان كثيرا ما يحدث نزف الدم من شريان قد انقطع عند جرح يعرض من خارج او عند شق ورم او كى عضو ونحو ذلك فيعسر قطعه فإذا حدث لأحد ذلك فاسرع بيدك الى فم الشريان فضع عليه اصبعك ٥ السبابة وشده نعماً حتى يحصر الدم تحت أصبعك ولا يخرج منه شئ ثم تضع فى النار مكاوى² زيتونية صفارا وكبارا³ عدة وتنفع عليها حتى تصير حامية جداً ثم تأخذ منها واحدة إما صغيرة وإما كبيرة على حسب الجرح⁴ والموضع الذى انفتق فيه الشريان وتنزل⁵ المكواة على نفس العرق بعد أن تنزع اصبعك بالعجلة وتمسك المكواة حتى ينقطع الدم فإن اندفع عند رفعك الأصبع من فم الشريان وطفأ المكواة ١٥ فخذ مكواة أخرى⁶ بالعجلة من المكاوى التى فى النار المعدة ولا تزال تفعل ذلك بواحدة بعد أخرى⁷ حتى ينقطع الدم وتحفظ⁸ لا تحرق عصبا يكون هناك فتحدث على العليل بلية أخرى، واعلم أن الشريان اذا نزف منه الدم فإنه⁸ لا يستطيع قطعه ولا سيما اذا كان الشريان ١٥ عظيماً إلا بأحد أربعة أوجه إما بالكى كما قلنا وإما ببتره اذا لم يكن قد انبتر فإنه اذا بتر تقلصت طرفاه وانقطع الدم وإما أن يربط بالخياط ربطاً وثيقاً. وإما أن توضع عليه الأدوية التى من شأنها قطع

H المزاج. 4. cett. او كبارا 3. BM, 2. APV. مكاوى 2. M. <ولم ينبت> 1. A. <قد> 8. AH. <ان> 7. M. محمية 6. H. وترك 5.

with ligatures or cloths, or by the application of caustics and the like, never stanch it by these means, or at least very rarely. And if this happen to anyone and there are available neither doctor nor remedies, let him at once apply his forefinger to the mouth of the vessel as we have bidden and close it firmly till the blood is stanchèd; and pour over the wound and over the artery, without removing the finger, water as cold as possible till the blood thickens and congeals and ceases to flow. And meanwhile one should be considering what kind of cautery or medicine is indicated.

الدم والشّد بالرفاءد شّدًا محكمًا وأما من يحاول قطعه برياط أو بشّد
 بالخرق أو وضع الأشياء المحرقة ونحو ذلك فإنه لا¹⁰ ينقطع بذلك البتّة
 20 إلا في النادرة فإن عرض لأحد ذلك ولم يحضره طبيب ولا دواء
 فليبادر بوضع الأصبع السّابة على فم الجرح نفسه كما وصفنا ويشدّه
 جدّا حتّى ينحصر الدم وينطل من فوق الجرح وعلى الشريان والأصبع
 لا تنزل من عليه بالما البارد الشديد¹¹ البرد دائماً حتّى يجمد الدم
 ويغلظ وينقطع وفي خلال¹² ذلك تنظر فيما يحتاج إليه من كى أو دواء

P. حلايل. 12. M. البرودة. 11. om. P. 10. BV. و 9.

BOOK TWO

ON INCISION, PERFORATION, AND VENESECTION, AND WOUNDS AND THE LIKE

IN the first book I spoke of all those diseases for which cauterization is of value, either the actual cautery or that done with caustic medicines; and of their reasons and causes; also the instruments and the shapes of the cauteries. This I set out in chapters, from head to heel. In this book I shall proceed along the same route so that it will be easy for the inquirer to find what he is looking for. But before I begin this you ought first to know, my sons, that in this book there is more risk than in the first, which treats of cauterization. Wherefore in this matter there should be greater circumspection. For in the course of the work of which this book treats there often occurs an effusion of the blood upon which life depends, in the opening of a blood-vessel or the incision of a tumour or the perforation of an abscess or the treatment of a wound or the extraction of an arrow, or in the incising for a calculus or similar cases; all of which are accompanied by uncertainty and fear; and in most death will supervene. So I warn you against undertaking any case in which there is any element of doubt to you; for in the exercise of the art you will be mobbed by all kinds of persons with all manner of afflictions; some being so weary of their sickness that death itself is a relief on account of the extent of their sufferings and the length of their miseries, their illness being so settled as to presage death. Some will lavish their wealth on you and enrich you, in the hope that they may be curable, when their disease is mortal. You should not assist any of this kind who approach you; let your caution be stronger than your greed and desire for

الباب الثانى فى الشق والبطن والفصد والجراحات¹ ونحوها² قال خلف³
 "قد ذكرنا" فى الباب الأول كل مرض يصلح فيه الكى بالنار والسدوا⁴
 المحرق وطله وأسبابه وآلاته وصور المكاوى وجعلت ذلك فصولا من
 القرن الى القدم وأنا⁵ أسلك فى هذا الباب ذلك المسلك بعينه
 5 ليسهل على الطالب مطلوبه، وقبل أن أبدأ بذلك فينبغى أن
 تعلموا يا بنى أن هذا الباب فيه من الغرر فوق ما فى الباب الأول
 فى الكى ومن أجل ذلك ينبغى أن يكون⁶ التحذير فيه⁷ أشد لأن
 العمل فى هذا الباب كثيرا ما يقع فيه الاستفراغ من الدم الذى به
 تقوم الحياة عند فتح عرق أو شق على ورم أو بطن خراج أو علاج
 10 جراحة أو إخراج سهم أو شق على حصاة ونحو ذلك مما يصحب
 كلها الغرر والخوف ويقع فى أكثرها الموت، وأنا أوصيكم عن الوقوع
 فيما فيه الشبهة عليكم فإنه قد يقع إليكم فى هذه الصناعة صنوف⁸ من
 الناس بضروب من الأسقام فمنهم من قد ضجر بمرضه وهان عليه الموت
 لشدة ما يجد من سقمه وطول بليته وبالمرض من التقرر⁹ ما يدل على
 15 الموت، ومنهم من يبذل لكم ماله ويغنيكم¹⁰ به رجاء الصحة ومرضه قتال
 فلا ينبغى لكم أن تتساعدوا من اتاكم ممن هذه صفته البتة، وليكن
 حذرکم أشد من رغبتكم وحرصكم ولا تقدموا على شئ من ذلك إلا بعد

B, أبو القاسم خلف بن عباس الزهراوى. 3. H. كلها. 2. H. والخراجات. 1.
 M. فانا. 5. M. فاز قد ذكرت. 4. M. أبو القاسم, P. خلف بن عباس
 cett. ضروبا, M. ضروب, B. 7. P. التحذر فيه, M. التحذر منه, H. التحذير منه. 6.
 cett. ويعينك. 10. cett. لك, A. ننسب لكم. 9. cett. الغرر. 8.

gain; and do not embark upon anything of this kind unless you have positive knowledge, which you judge adequate, about the way of bringing the patient a good outcome. In treating every patient be prescient and foretell the means whereby health may be restored to him. That will help you to obtain renown, glory, fame, and praise. May God inspire you, my sons, with His guidance, and grant that you hit the mark and succeed; for it is in His hand; there is no God but He.

I have arranged this book in sections as I did with the previous book on cauterizations, from head to heel; so you will the easier find in it what you seek.

علم يقين يصحّ عندكم بما يصير اليه العاقبة¹¹ المحموده، واستعملوا في
 جميع علاج مرضاكم تقدمه المعرفة والإنذار بما تؤول اليه السلامة فإن
 20 لكم في ذلك عونا على اكتساب الثناء¹² والمجد والذكر والحمد،¹³ ألهمكم
 الله يا بنى رشده¹⁴ ولا حرّمكم الصواب والتوفيق إن ذلك بيده لا إله
 إلا هو، وقد رتبت هذا الباب فصولا على ما تقدّم في باب الكسى
 من القرن الى القدم ليخفّ عليكم مطلب¹⁵ ما تريدون منه¹⁶ إن شاء الله،

BP. رشدكم. 14. H. <و>. 13. M. البقاء. 12. V. العاقبة, HM. العافية. 11.
 15. P. مطلبكم و. 16. om. A.

CHAPTER ONE. On the cure of hydrocephalus.

This disease occurs most commonly in infants upon delivery when the midwife grasps the child's head roughly. It also sometimes happens from some hidden and unknown cause. I have never seen this disease except in very small children; and death very quickly overtook all those that I have seen; therefore I have preferred not to undertake operation in these cases. I have seen a child whose head was filled with fluid and daily growing in size, until the child could not sit upright on account of the size of his head, and the humidity increased till he died. Now this humidity sometimes collects between the skin and the bone; sometimes it collects beneath the bone and over the membrane. The operation is thus: when the humidity is between the skin and the bone and the swelling is small, an incision should be made in the middle of the head, transversely. The length of the incision should be about two thumb-joints, so that the humidity may flow out. This is the form of the scalpel (fig. 39). If the humidity is more copious and the swelling greater, make two intersecting incisions to this pattern (fig. 40).¹ But if the humidity is beneath the bone—and the sign of that is

¹ Channing is mistaken in saying that this figure is missing from both Oxford MSS. It is in fact given in M as a Greek cross (as also in A). In P the figure is of a Latin cross. Its omission from the other MSS. is possibly due to their scribes' reluctance to copy what to them was primarily a Christian symbol.

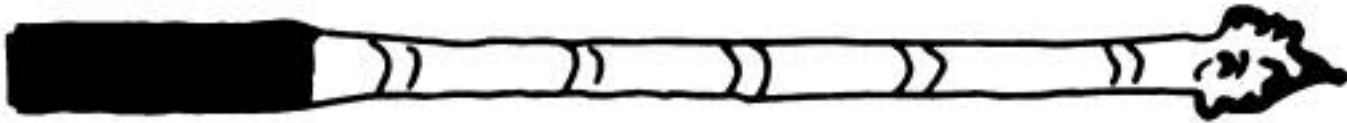
BOOK TWO. CHAPTER ONE

Hydrocephalus does not seem to have been noticed in Hippocrates, at least not in the genuine works. It was first described by Celsus (IV. 2): *Praeter haec etiamnum invenitur genus quod potest longum esse, ubi humor cutem inflat, eaque intumescit et prementi digito cedit: ὑδροκέφαλον Graeci appellant.* And he goes on to say that if a mustard plaster does not effect a cure, by ulcerating the head, the knife is to be employed . . . *scalpello utendum est.* . . . Galen first mentions the four varieties spoken of here, in his *Medicus* (19) but gives no direction for dealing with the condition. Antyllus was the first boldly to advocate two or more incisions

in cases where the fluid is collected between skin and bone. The pseudo-Galenic *Isagoge* recommends perforation of the bone. All these teachings are collected up by Paulus Aegineta (VI. 3) and his chapter is transcribed almost word for word by Albucasis. But he does not mention the H incision here. The scalpel he illustrates for the operation (*mibda'*—see note to chapter 46) is of the simplest kind, straight, with a plain blunt end. The Huntington MS. drawing shows a more curved and pointed knife; so it may have been not very material what knife was used.

الفصل الأول في علاج الماء الذي يجتمع في رؤوس الصبيان

إن هذا السقم كثيرا ما يعرض للصبيان عند الولادة⁽²⁾ اذا ضغطت⁽²⁾ القابلة رأس الصبي بغير رفق وقد يعرض أيضا من علة خفية لا تعرف ولم أر هذه العلة في غير الصبيان وجميع من رأيت منهم أسرع اليه الموت فلذلك رأيت ترك العمل به ولقد رأيت منهم صبيا قد امتلأ رأسه ماء والرأس يعظم في كل يوم حتى لم يطق الصبي يقعد على نفسه لعظم رأسه والرطوبة تتزايد⁽³⁾ حتى هلك، وهذا الرطوبة إما أن تجتمع بين الجلد والعظم وإما أن تجتمع تحت العظم على الصفاق، والعمل في ذلك إن كانت الرطوبة فيما بين الجلد والعظم وكان الورم صغيرا فينبغي أن تشق في وسط الرأس شقا واحدا بالعرض ويكون طول الشق نحو عقدين حتى تسيل الرطوبة وهذه صورة الموضع:



Marsh



Fig. 39

Huntington

فإن كانت الرطوبة أزيد والورم أعظم فاجعلها شقين متقاطعين على هذه الصورة:



Fig. 40

Marsh

V, او اذا صعقت AP, واذا اضغطت BP. > من هذا الباب. 1.
H. تتولد MV, تتزيد. 3. M. واذا قطعت

that you will see the sutures of the skull gaping on all sides, the water manifestly yielding when you press in with your fingers—you should make three incisions in the middle of the head, in this pattern (fig. 41). After incising, draw out all the humidity; then bind up the incisions with pads and bandages; and over the bandages foment with wine and oil till the fifth day. Then loose the bandage and dress the wound with lint and ointments. And do not forget to bandage the head lightly; and feed the patient with a dry diet with little fluid, until the part is strengthened and healed. Another pattern of incision is to see where the tumefaction and collection of fluid is apparent. For sometimes it is greater in the posterior or anterior part of the head, or to the right or to the left. Therefore make your incision where the tumefaction and dropsy are apparent; incise that place in whatever way you can. Be careful not to cut an artery lest you cause haemorrhage and the patient die of that haemorrhage at the same time that the humidity is evacuated.

وإن كانت الرطوبة تحت العظم وعلامته أن ترى خياطات⁴ الرأس
¹⁵ مفتوحة من كل جهة والماء⁵ ينخفض⁶ إذا عصرته بيدك الى داخل وليس
 بخفى ذلك عليك فينبغى أن تشق⁷ فى وسط الرأس ثلاثة شقوق على
 هذه الصورة:

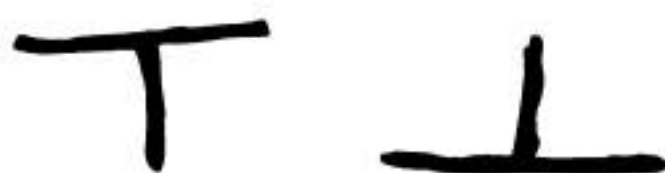


Fig. 41

Marsh

Huntington

وبعد الشق تخرج الرطوبة كلها ثم تشد الشقوق بالخرق⁷
 والرفائد ثم تنظله من فوق بالشراب والزيت الى اليوم الخامس ثم تحل⁸
²⁰ الرباط وتعالج الجرح بالقتل والمراهم ولا تترك شد الرأس باعتدال
 وتغذى العليل بكل غذاء جاف قليل الرطوبة الى أن يقوى العضو
 ويبرأ، وصفة أخرى من الشق أن تنظر حيث يظهر عظم الورم واجتماع
 الماء لأنه قد يكون فى مؤخر الرأس أكثر او فى مقدمه او فى اليمين او
 فى الشمال فتقصد⁹ بالشق حيث ظهر لك الورم وامتلأ الماء فتشقّه على
²⁵ ما يمكنك وتحفظ أن تقطع شريانا فتحدث نزفا فيموت العليل من ذلك
 النزف مع استفراغ الرطوبة،

M. يتحقق B. يتحفض 6. P. وانما 5. H. خات من 4.

PV. فتصعد 9. H. اليسار 8. P. بالحروق 7.

CHAPTER TWO. On the incision of the occipital arteries.

When a person gets painful defluxions into the eyes or chest which become chronic, and medical treatment is ineffectual in this case, then section of these arteries will be the most efficacious treatment. When you decide on section, you should shave the patient's head with a razor; then rub the place with a rough cloth to show up the artery; then bind the patient's neck with an end of his garment; then you will observe where the artery is pulsating (the sites of both are the depressions behind the ears) for it is uncommon for them to remain hidden, except in a few persons. Then do you mark with ink over both; then cut with a hooked scalpel, cutting down to the bone; the incision should be lateral to the head. Or if you prefer, introduce the scalpel beneath the artery and make a thrusting

BOOK TWO. CHAPTER TWO

Post-aural arteriotomy was a well-accepted procedure; and Albucasis gives it in almost every detail as found in the writings of Severus, Aetius, Paulus, and Avicenna. The friction with a rough cloth to increase the circulation and make the blood-vessels promi-

nent is an original contribution. Albucasis does not illustrate the two-edged scalpel he recommends for this operation. For a discussion of the term *mūḍa' nashl* used here, see note to chapter 46.

الفصل الثانى فى قطع الشريانيين اللذين خلف الاذنين المعروفين¹
بالحسيين²

متى عرض لأحد نزلات حادة الى العينين او الى³ الصدر وأزمن ذلك ولم ينجع فى ذلك علاج الأدوية فأبلغ العلاج فى ذلك قطع⁴ هذين الشريانيين،⁵ فينبغى اذا أردت قطعهما أن تحلق⁶ رأس العليل⁷ بالموسى ثم تحك⁸ الموضع بخرقه خشنة ليظهر الشريان ثم تشد⁹ رقبه العليل¹⁰ بفضل ثوبه ثم¹¹ تنتظر حيث ينبض العرق وموضعاهما الموضعان المتخفضان اللذان خلف الأذنين وقّل ما تخفى إلا فى بعض الناس ثم تعلم عليهما بالمداد ثم تقطعهما بالمبضع النشيل¹² قطعاً الى العظم ويكون¹³ ذلك بعرض الرأس وإن شئت أدخلت المبضع من تحت الشريان وتنتره¹⁴ الى فوق بالقطع ويكون¹⁵ طول القطع نحو

1. BH, المعروفة, cett. 2. H [id est, 'بالخُشَا', بالحسا], S, وذلك 4. H. <الرأس و>. 3. [id est, 'بالخُشَا', cett. بالحشا] 5. M. بالموسى ثم يحك الموضع بخرقه خشنة لتظهر الشريانيين و العليل 6. AHV. العليل رقبته 7. V. النشيل 8. om. M. 9. V. ونسبته, P. وتبتره, B. وتنتره, H. وتبتره, A. وتنتره 10. AHV. رأسه 11. 12. 13. 14. 15.

cut up at it. The incision should be of about two fingers' breadth. When cut, the artery gives out a pulsating jet of blood spurting intermittently. If the artery is not discernible, you should measure three fingers' breadth from the ear, than mark with ink, and cut down to the bone. The quantity of blood that should be let is six ounces on the average, but often more blood, or less, is withdrawn; all in proportion to the strength of the patient and the fullness of the arteries as they appear to you. Then examine the wound and if there remains on the bone any part of the membrane cut it off to avoid a haematoma. Then bind up the wound with a bandage of linen cloth and dress with ointments till healed.

أصبعين مضمومتين فإن العرق اذا انقطع خرج الدم خروجا نبضيّا
 يشب الى قدام¹⁰ وثوبا متواترا ، فإن لم يظهر الشريان للحس فينبغي
 أن تقدر من الأذن¹¹ بعد قدر¹² ثلاث أصابع ثم تعلم بالمداد وتشق
 15 الى العظم ، والذي ينبغي أن ترسل من الدم ست أواق¹² على
 التوسط¹² وربما أرسلت منه أكثر او أقل¹³ كل ذلك¹³ على قدر ما يظهر لك¹⁴
 من قوة العليل وامتلاء شرياناته ، ثم تنظر الى الجرح فإن بقى على
 العظم من الصفاق شيء فاقطعه لئلا يعرض ورم حارّ ثم تشدّ الجرح
 بفتيلة من خرق كتان ثم عالجه بالمراهم حتى يبرأ ،

10. H. فوق 11. P, BM, قدر بعد cett. 12. om. P. 13.
 om. MP. 14. ABP. اليك.

CHAPTER THREE. On the extraction of the temporal arteries.

When a man has a chronic migraine or acute catarrh, on account of acrid humidities and heat in the temporal muscles, or a violent chronic headache, or the like, and he has been treated with various medical treatments without success, we have sometimes in these diseases tried extraction of the arteries from the temples or cauterization of them, already described. The manner of extraction is for the patient to shave the temporal hair; then you press upon the artery appearing on the temple; for it will be manifest to you by its pulsation, and is rarely invisible save in a few people or on account of severe cold. But if it is not plain to you then let the patient bind his neck¹ with the end of his garment; then do you rub the place with a piece of cloth or foment with hot water, till the artery is obvious to you; then take a scalpel shaped thus (fig. 42); then with it gently scrape away the skin till you come to the artery, then stick a hook in it and draw it upward till you extract it from the skin and free it all round from the membranes that are beneath it. But if the artery be thin, twist it with the tip of the hook and cut out enough of it for the two ends to be well separated from one another and

¹ AHP read 'head'.

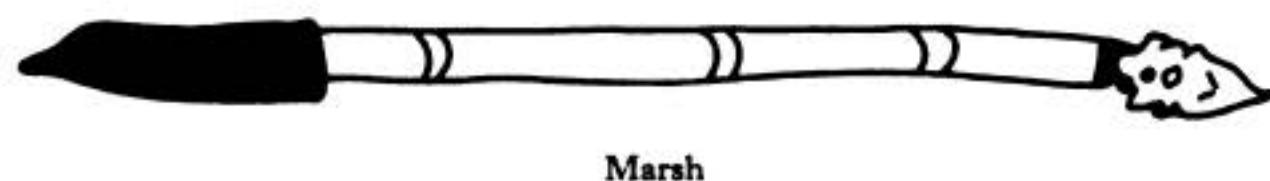
BOOK TWO. CHAPTER THREE

Bleeding for chronic headache was recommended by Hippocrates (*Aph.* v. 18, *Epid.* II. 13). Celsus mentions the cautery for the temporal veins and gives a very similar account of how to tie the neck to make the veins stand out; he speaks of small and blunt irons for the burning; then he also allows incising the vessels but says they must afterwards be cauterized. Paulus mentions the use of hooks to bring the vein into better exposure (VI. 5); otherwise, he and others follow Celsus. It is to be noted that Albucasis refers to incision of the arteries, not the veins; hence the head, not the neck, is to be bound; and he also brings forward a new instrument, the double-bladed cutting cautery. This is a very curious

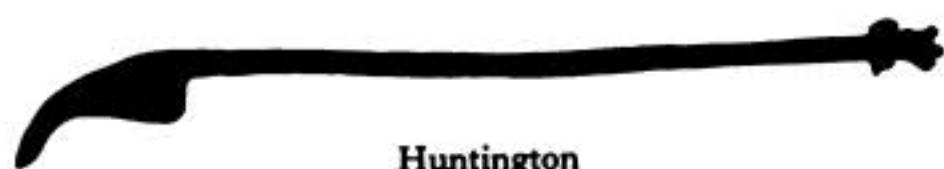
iron, quite unlike the cutting cauterics shown in the first book (see comments on chapters 4, 6, 18, and 22, etc). The Marsh figure seems to represent a perspective view of the two blades fixed at right angles to the two arms of the forked end. The Huntington figure seems to show them end-on. The knife illustrated (fig. 42) resembles that for opening the head in hydrocephalus, but is longer and pointed, and is used for paring away the tissues rather than making an incision. The word is the common *mibḍa*. It should be noted here that the word 'paring-knives' used at the end of the chapter for the blades of the special cautery (Arabic, *maḥḍatin*) is never used for knife in the surgical sense.

الفصل الثالث فى سَلّ الشريانين اللذين فى الأُصداع

إذا حدث بإنسان شقيقة مزمنة أو نزلات حادة من قبل رطوبات¹
حرّيفة وحرارة فى عضلات الاصداع أو صداع مزمن شديد ونحو ذلك
وعولج بضروب علاج الطب فلم ينجع ذلك فقد جرّنا فى هذه الأمراض
5 سَلّ الشريانات من الأُصداع أو كَيْها كما وصفنا ووجه العمل فى سَلّها
أن يحلق العليل الشعر الذى فى الأُصداع وتقصد الشريان الظاهر
فى الصدغ فإنه يتبين لك من نبضه وقَل ما يخفى الآ فى الفرد من
الناس أو عند شدة البرد فإن خفى عليك فليشدّ العليل رقبته² بفضل
ثوبه ثم تحك أنت الموضع بخارقة أو تكمد الموضع بما³ حار حتى يظهر³
10 الشريان ظهوراً⁴ بيّناً واضحاً⁴ ثم تأخذ الموضع الذى هذه صورته:



Marsh



Huntington

Fig. 42

ثم تسلخ به الجلد برفق حتى تصل الى الشريان ثم تلقى فيه
صنارة وتجذبه الى فوق حتى تخرجه من الجلد وتخلّصه من الصفاقات
التي تحته من كلّ جهة فلن كان الشريان⁵ رقيقاً فتلويه بطرف الصنارة
ثم تقطع منه جزءاً على قدر ما يتباعد⁶ طرفاه وتتقبض ولا تحدث نزفاً

AM, بيّنا V, 4. AHM. <لك> 3. AHP. راسه 2. P. <أو برد> 1.
A. تباعد, P. يبتاعد, M. يشنا عليه 6. P. <لرفه> 5. cett. واضحاً

contract so that no haemorrhage occurs; for if it is not divided and cut it will not let blood flow at all.¹ Then let blood, from six to three ounces. If the artery be large it should be ligated in two places with a strong double thread; the threads should be either silken or lute-string, lest corruption attack them before the wound is healed, and haemorrhage occur. Then cut away what remains between the two ligatures; do that immediately or later. If you wish, you may cauterize it down to the bone with an edged cautery so that the ends of the artery be divided; for this will replace that operation. It is in fact better, as we have said, unless the patient is feverish or of a hot constitution; cauterization is one of the means of eliminating humidities, so it will be of surer efficacy. After extraction of the arteries the place must be packed with teased-out cotton wool, and on top of that must be put firm pads. And after loosening the ligature, dress with dry medicaments that encourage growth of flesh, and with bandages, till it heals. But if arterial bleeding hinders you in the course of your operation, hasten to stanch it either by cauterization or by filling the place with vitriol,² compressing it with your hand till the blood stays; or, if you have nothing of this kind by you, put your finger on it till the blood clots and rinse over the place till the flow dies down; then tie off as you should. Less serious and easier than excising the artery is to cauterize the vessel with this cautery provided with two blades, having first marked both places with ink. Bring it down, very hot, till it

¹ The reading of H perhaps gives better sense: 'for when it is divided and cut it will not bleed at all'.

² *Zāj*, probably the green vitriol, i.e., iron sulphate.

١٥ فَإِنَّهُ^٧ إِنْ لَمْ^٨ يَبْتَر^٩ وَلَمْ يَنْقَطَعْ^{١٠} لَمْ يَرْق^{١١} الدَّمُ اصْلا ثُمَّ اسْتَفْرَغَ مِنَ الدَّمِ مِنْ
سِتِّ أَوَاقٍ إِلَى ثَلَاثٍ، فَإِنْ كَانَ الشَّرِيَانُ عَظِيماً فَيَنْبَغِي أَنْ تَرْبِطَهُ فِي
مَكَانَيْنِ بِخَيْطٍ مَشْنُوقٍ وَلِيَكُنَ الْخَيْطُ إِمَامًا مِنْ أِبْرَيْسَمٍ وَإِمَامًا مِنْ أَوْتَارِ
الْعُودِ لئَلَّا يَسْرَعَ إِلَيْهِ الْعَفَنُ قَبْلَ التَّحَامِ الْجَرْحِ فَيَحْدُثُ النَّزْفُ، ثُمَّ
تَقْطَعُ فَضْلَ مَا بَيْنَ الرِّبَاطَيْنِ تَفْعَلُ ذَلِكَ فِي تِلْكَ السَّاعَةِ أَوْ بَعْدَ وَقْتِ
٢٠ آخَرٍ، وَإِنْ شِئْتَ أَنْ تَكْوِيَهُ كَيًّا إِلَى الْعِظَمِ بِمَكْوَاةٍ سَكِينِيَّةٍ حَتَّى يَنْبَتَرَ
أَطْرَافُهُ فَيَقُومَ مَقَامَ هَذَا الْعَمَلِ بَعِينُهُ أَوْ أَفْضَلُ كَمَا قُلْنَا إِلَّا إِنْ كَانَ
الْعَلِيلُ بِهِ حَتَّى أَوْ مَحْرُورُ الْمَزَاجِ لِأَنَّ الْكَيَّ مَعَ^{١٢} يُعِينُ عَلَى إِفْنَاءِ
الرَّطُوبَاتِ فَيَكُونُ أَوْكَدَ فِي الْمَنْفَعَةِ، وَيَنْبَغِي بَعْدَ سَلِّ الشَّرِيَانَيْنِ أَنْ
يَحْشَى الْمَوْضِعَ بِالْقَتَنِ الْبَالِي وَتَوْضِعَ عَلَيْهِ الرِّفَائِدَ^{١٣} الْحَكِيمَةَ وَبَعْدَ الْحَلِّ
٢٥ يَعْالِجُ بِالْأَدْوِيَةِ الْيَابِسَةِ الَّتِي تَنْبَتُ اللَّحْمُ وَبِالْفَتْلِ حَتَّى يَبْرَأَ إِنْ شَاءَ
اللَّهُ، فَإِنْ حَدَثَ فِي خِلَالِ عَمَلِكَ نَزْفٌ مِنَ الشَّرِيَانِ فَبَادِرْ إِلَى قِطْعِهِ
إِمَّا بِالْكَتْيِ وَإِمَّا أَنْ تَمْلَأَ الْمَوْضِعَ بِالزَّاجِ وَتَشَدَّ يَدَكَ حَتَّى يَنْقَطَعَ الدَّمُ فَإِنْ
لَمْ يَحْضُرْكَ مِنْ ذَلِكَ شَيْءٌ فَضَعْ أَصْبَعَكَ حَتَّى يَجْمَدَ الدَّمُ وَانْظُرْ الْمَوْضِعَ
بِالْمَاءِ الشَّدِيدِ الْبَرْدِ حَتَّى تَسْكُنَ الْحَدَّةُ وَتَشَدَّ عَلَى مَا يَنْبَغِي، وَمِمَّا
٣٠ هُوَ أَخَفُّ وَأَسْهَلُ مِنْ سَلِّ الشَّرِيَانِ أَنْ تَكْوِيَ الْعِرْقَ بِهَذِهِ الْمَكْوَاةِ ذَاتِ
السَّكِينِينَ^{١٤} بَعْدَ أَنْ تَعْلَمَ الْمَوْضِعَيْنِ^{١٥} بِالْمِدَادِ وَتَنْزِلْهَا حَامِيَةً جَدًّا حَتَّى

P. يتبين، M. يكثر، V. تبير، S. نسر، B. ينتر، A. 8. B. لم، H. لما. 7.

V, om. P. لم يزف، H. لم سرف. 10. H. وانقطع. 9.

11. B. متين. 12. P. أبدا. 13. الضمايد. P. 14. BMV; in AHPS

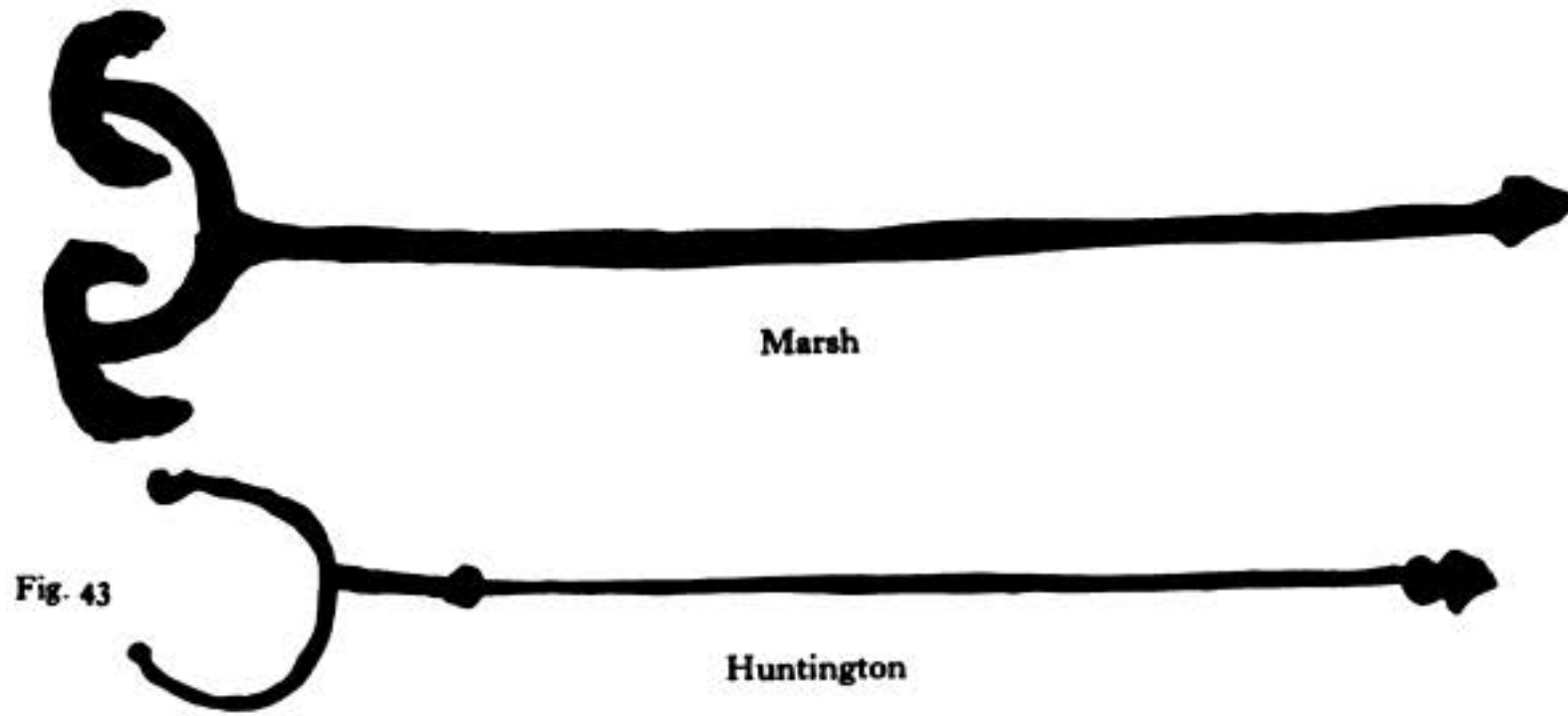
PV. الموضع. 15. alius ordo commatum.

reaches the bone and the artery is cut in two places, so as to put some distance between the two ends, for it will certainly not unite after this cauterization. This is the form of the cautery (fig. 43).

It should have two sharp blades like two small paring-knives, but they should be much less sharp than a knife, for if they are as sharp as a knife they will quickly lose their heat and the flesh will be slow in cutting. If they have a certain thickness in them the heat of the fire will be retained in them and they will speedily cut the flesh. This operation is superior to all and less severe and easier. Let the distance between the two blades be the breadth of a finger.¹

¹ M reads 'the thickness of three or two fingers'.

تبلغ الى العظم وينقطع العرق في موضعين لكى¹⁶ يتباعد ما بين طرفيه
فإنه لا يلتحم بهذا الكى البتة، وهذه صورة المكواة:



تكون حادة السكين تشبه المقدتين الصغيرتين إلا أنها تكون
35 أقل حدة من السكين كثيرا لأنه إن كانتا حادتين كالسكين أسرع
اليهما البرد ولم ينقطع اللحم¹⁷ بسرعة، فإذا كان فيهما بعض الغلظ
امتسك فيهما حر النار وقطعت اللحم بسرعة، وهذا العمل أفضل
من كل عمل وأخف وأسهل، وليكن بعد ما بين السكينين قدر¹⁸ غلظ
الأصبع،^(14,18)

M. ثلاثة اصابع او اصبعين 18. P. العرق 17. P. <ما> 16.

CHAPTER FOUR. On the treatment of a chronic flux of bitter tears into the eyes.

When lachrymation is chronic and arises from the external vessels on the cranium, nor does treatment by any kind of medical remedy have any effect, and you see the patient's features flushed, and he feels a creeping in his forehead like that of an ant, and his eyes are wasted and moist, and the roots of the lashes itch, and the eyelids are burned by the bitterness of the tears, the Ancients were compelled to treat it by this operation which they called 'treatment by the sword'. You bid the patient shave the hair of his forehead; then you make three parallel incisions across his forehead a little apart; and let the length of each incision be two fingers' breadths; the first incision continuing the line of the nose in the middle of the forehead; and the second at a little distance from the temporal muscle; and the third incision on the other side of the forehead. Beware of cutting the two arteries which are at the sides, and keep your hand away from the mandibular joint; and let there be a distance between each incision as of three fingers joined. Have ready by you some pieces of sponge or a number of linen towels to wipe away the blood. Then introduce the double-edged scalpel shaped thus (fig. 44) through the incision near the temple to the

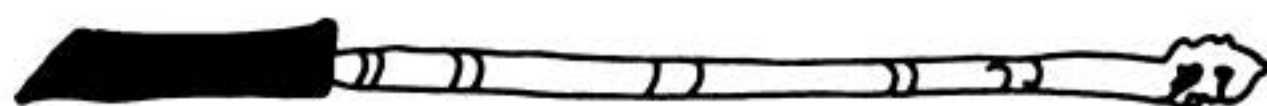
BOOK TWO. CHAPTERS FOUR AND FIVE

This operation is that described by Paulus (VI. 6) as *hypsothismus*. His chapter on defluxions into the eyes and their cure is the source whence Albucasis drew these two chapters. Paulus himself followed Celsus (VII. 7), who described how some practitioners in Greece cut the scalp in nine lines, etc.; and also Galen (*Meth. Medendi* XIII) who gives similar procedures and says they were derived from the Gaetani in the land of the Celts. The operation was very like that named *periscythismus*, a term derived from the Scythians who originally practised it, who were a race akin to the Celts. Paulus (VI. 6 and 7) was the first of the Ancients to give a full description of these formidable operations together with their names.

Albucasis copies Paulus Aegineta and then

describes the instruments used, viz. a sharp two-edged, rather than two-headed, scalpel for cutting and raising up the skin. The word is the usual one for the surgical knife, *mūḍa'*; and the figure in the Marsh MS. resembles that in chapter 1 but both edges are sharp. He describes a second knife with one blunt and one sharp edge for cutting through the subcutaneous tissues and the veins. This he calls a 'knife-shaped' instrument, the word used being *sikkiniya*, an adjective derived from *sikkīn* meaning a common or kitchen knife. It is characterized by great thickness and strength, giving a rounded blunt back edge and a rounded extremity. The same word is used in chapter 95 to describe a lancet for letting blood.

الفصل الرابع فى علاج سيلان الدموع الحارة الدائمة الى العينين
 اذا كانت الدموع دائمة وكان سيلانها من العروق التى على قحف
 الرأس من خارج ولم يكن ينتفع فيها بشئ من علاج الطب بالأدوية
 ورأيت وجه العليل قد احمر ويحس فى جبينه ديبيا كدبيب النمل
 5 وعيناه مهزولتان رطبتان قد تأكلت اشجارهما وتشبّطت¹ اجفانهما من
 حدة الدموع فاضطرت الاوائل فى علاجها الى هذا العمل ويسمونه
 العلاج بالسيف، وهو أن تأمر العليل بحلق² الشعر الذى فى جبهته
 ثم تشق فى الجبهة ثلاثة شقوق متوازية على طول الجبهة ويكون طول
 الشق نحو أصبعين الشق الواحد موازيا لطول الأنف فى وسط الجبهة
 10 والثانى على البعد قليلا من حركة العضل الذى فى الصدغ والثالث
 من الجهة الأخرى وتحفظ من قطع الشريانين اللذين فى الجانبين³
 وأبعد يدك من اتصال الفكين ويكون بعد كل شق قدر ثلاث اصابع
 مضومة وليكن معك قطع إسفنج معدة او خرق ناشفة كثيرة بما تنشف
 الدم ثم تدخل الموضع الحاد الطرفين الذى هذه صورته:



Marsh



Huntington

Fig. 44

1. V, وسقطت M, وتسيطت BHS, وسطت A, ونسقطت V.

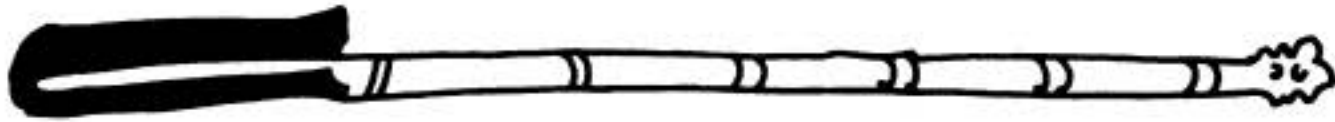
2. HP. الحاجبين 3. M. «رأسه من» BP, «رأسه و».

middle incision, and with it pare off all the skin between the two incisions with the periosteum; then do the same from the middle incision to the third one; then draw out this scalpel and introduce into the first incision another instrument which is known as 'the knife-shaped': sharp on one side, smooth and blunt on the other, thus (fig. 45). The sharp edge of it should be turned upward to the subcutaneous tissue and the smooth edge toward the bone; then push it on to reach the middle incision and with it cut all the vessels passing from the head down toward the eyes, without letting the incision come through the outer skin. Then do the same from the middle incision to the third. After a moderate quantity of blood has flowed, express the bits of blood-clot from the place and pack into each incision a pad of teased-out cotton wool. Over all put a pad soaked in wine¹ and oil, or vinegar and oil, lest an effusion² occur. On the third day loosen the bandage and rinse with plenty of tepid water and afterwards dress with balm of basilicon with rose-ointment and other treatments for wounds, until healed.

¹ Here H inserts a marginal note warning Muslim readers against the use of wine and proposing honey-water instead. Such notes occur frequently in this MS.

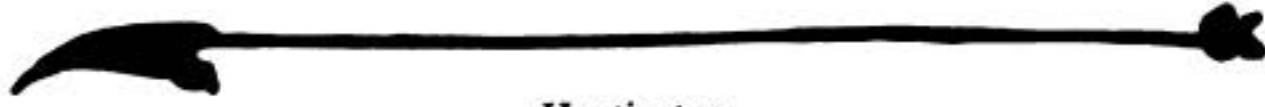
² Lit. 'hot swelling'.

15 من الشق الذى يلى الصدغ الى الشق الأوسط وتسلخ به جميع الجلد الذى فيما بين الشقين مع الصفاق الذى على العظم ثم تفعل ذلك ايضا من الشق الأوسط الى الشق الثالث ثم تخرج هذا الموضع وتدخل فى الشق الأول ايضا آلة أخرى تسمى سكين حادة من الجهة الواحدة وملساء غير حادة من الجهة الأخرى وهذه صورتها :



Marsh

Fig. 45



Huntington

20 وتصير جانبها الحاد الى فوق نحو اللحم الملتصق بالجلد وجانبها الأملس نحو العظم وتدفعها حتى تنتهى الى الشق الأوسط وتقطع بها جميع الأوعية التى تنزل من الرأس الى العينين⁵ من غير⁴ أن يصل القطع الى ظاهر الجلد ثم تفعل ذلك فى الشق الأوسط الى الشق الآخر، وبعد أن يسيل من الدم القدر المعتدل تعصر المواضع 25 من قطع الدم الجامد ثم تصير فى كل شق فتيلة من قطن بال وتضع عليها رفادة قد بلت بشراب وزيت او خل وزيت لئلا يحدث ورم حار وفى اليوم الثالث تحلّ الرباط وتستعمل التنطيل الكثير بالما الفاتر ثم تعالجه بمرهم الباسليقون بدهن الورد وسائر ما تعالج به الجراحات الى أن يبرأ إن شاء الله،

4. H, cett. الثانى 5. واحد من H. 6. من M.

CHAPTER FIVE. On the treatment of tears and defluxions in the eyes arising from within the head.

When anyone has a quantity of painful defluxions, acrid and continuous, and you see the eyes wasted and sunken and their sight is weakened and the eyelids are ulcerated and lose their eyelashes; while deep in the head there may be a vehement and grievous pain with incessant sneezing, then you may know from these occurrences that those humours and catarrhs arise from many deep blood-vessels. The best treatment in this case is that which follows: you bid the patient shave his forehead; then you make one incision in the middle of his forehead or a little above, crosswise (begin the incision from the left temple going toward the right temple; the incision should be down to bone; and avoid the temporal muscles that move during mastication) until the bone is laid bare. Wipe away all the blood with a sponge and separate the edges of the incision with teased-out cotton wool or with rolls of linen; then bind up with pads over; the pads should be soaked in wine and oil to guard against an effusion. When you undo it, if you see that an effusion has erupted, you should scrape the bone until a growth of flesh begins in it; then treat with a drying treatment which generates flesh. For example, two parts of wheat flour are taken and of colophonia four parts, and of them a salve is made which may be used to encourage the growth of flesh in wounds of this sort.¹

¹ Here the Cremona Latin version gives illustrations (fig. 45) of two instruments which it says are not referred to by the author.

الفصل الخامس فى علاج الدموع والنزلات الى العينين من باطن الرأس

مضى حدث لأحد نزلات كثيرة حادثة حريفة دائمة وترى العينين

منه مهنولتين صغيرتين وقد ضعف نظرهما والأجفان متفرقة وتساقط

الاشعار منهما ويكون² فى عمق الرأس وجع حاد مؤلم وعطاس متتابع فاعلم

5 من هذه الأعراض أن تلك الموائ والنزلات إنما تجى³ من عروق كثيرة

عميقة³ وأفضل العلاج فيها هذا العلاج ، وهو أن تأمر العليل بحلق

جبهته ثم تشق شقًا واحدًا فى وسط الجبهة أو أرفع قليلا بالمعرض

وتبتدى بالشق من الصدغ الأيسر الى الصدغ الأيمن ويكون الشق الى

العظم وأبعد يدك عن عضل الصدغين المتحركين عند المضغ حتى اذا

10 انكشف العظم ونشفت جميع الدم بالإسفنجة ففرق بين شفتى الشق⁴

بالقطن البالى أو بغزل من اللكان ثم تشد من فوق بالرفاعد وتشرب

الرفاعد بالشراب والزيت لئلا يحدث ورم حار ومتى حلتها رأيت أن

الورم الحار قد نقص فنبغى أن تحك العظم حتى يبدأ فيه نباتات

اللحم ثم تعالجه بالتدبير الجفّ الذى ينبت اللحم مثل أن يؤخذ

15 من دقيق الحنطة⁵ جران ومن القنفذ اربعة اجزاء ويهيا⁶ منهما مرهم

ويستعمل فى نبات اللحم فى مثل هذه الجراحات،

Fig. 45 A



Fig. 45 B



P. عزيفه، AB عتيقة 3. M. وقد يكون 2. M. حاميّه 1.

M. الكرسته 6. ? نط. an leg. نقص، M. 5. B. > واحشه < 4.

CHAPTER SIX. On the treatment of things that fall into the ear.

All that falls into the ear comes under four categories: mineral stone, or what resembles stone, such as iron or glass; vegetable grain such as pea or date-stone or the like; or liquid such as water or vinegar; or animal. When a stone or something of that sort that does not grow gets into the ear, turn the ear toward the sun. If you see the stone, pour upon it a little oil of violets or sesame; then try to get it out by moving the head or by inducing sneezing with ptarmica and keeping the nose closed at the onset of sneezing, having first made round the ear a circle of pieces of cloth or wool and drawn the ear upwards. This treatment will usually bring it out. But if it does not come out, try to get it out with a fine pair of tweezers shaped thus (fig. 46).

BOOK TWO. CHAPTER SIX

As to foreign bodies in the ear, treatment, according to Albucasis, follows closely the lines laid down by Celsus (vi. 24), Oribasius (*Loc. affect.* iv. 36 and 39), Galen, and Paulus (vi. 24). The illustration of the *volSELLa*, given here (fig. 46), is a little hard to interpret, and the Marsh drawing is so rough that little can be made of it; the Huntington drawing at first sight looks like a fine funnel such as he describes lower down. But closer view suggests two slender springing jaws fixed firmly to a solid handle or base (b); and a middle part that is really a sliding collar (c) which, on being slid along the jaws (a) away from (b), closes the jaws and grips the foreign body in the ear. Thus:



If this fails to catch the foreign body a hook is to be used; and, if this does not succeed, strong suction with a bronze cannula. Neither of these is illustrated here but we may assume they were of the ordinary types shown elsewhere (see chapter 46 for hooks

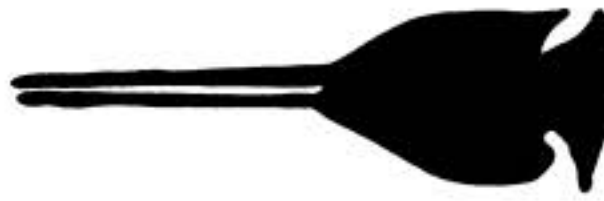
and lower down in this chapter for a cannula). Then there is shown a special narrow fine-pointed scalpel (*mibda'*) to introduce into the ear to cut up into pieces a grain or other vegetable substance that had got impacted by reason of swelling. The description of this particular scalpel, which corresponds closely with the figures in both MSS., was not given by any previous author. He also gives an account with figures of an ear speculum, a species of cannula tapering toward one end. The narrow end having been inserted into the ear, strong suction exerted from the other would fetch out the object, a worm in this instance. If this manœuvre failed then the operator should instil oils into the ear; and for this an instrument is shown which, although it is not given a name, appears to be a funnel rather like the last, the cannula, but with the addition of a plunger to help force the oil or other medicament into the ear and presumably past the obstruction. This plunger is clearly shown in the two drawings reproduced (fig. 49). He also says it might be improvised by means of a rod wrapped round with wool. The impression left is that it was really a kind of rough syringe. But such excellent syringes are shown later (see chapter 59 and notes) that this must be only a guess.

الفصل السادس فى علاج ما يسقط فى الأذن

جميع ما يسقط فى الأذن أحد أربعة أنواع إما حجر معدنى أو شبه الحجر كالحديد والزجاج¹ وإما حب² نباتى كالحمص والنواة ونحو ذلك وإما شئ سئال مثل الماء والخل ونحوه³ وإما حيوان⁴ فمتى سقط فى الأذن حصة أو جنس الحصة مما لا يربو فى الأذن فاستقبل⁵ بالأذن الشمس⁴ فإن رأيت الحصة فقطر فيها شيئا من دهن بنفسج⁵ أو السيرج ثم حاول إخراجها⁶ بحركة الرأس أو التعطيس⁶ بالكندس وسد المنخرين عند مجئ العطاس بعد أن تضع حول الأذن طوقا من خرق أو صوف وتمد الأذن الى فوق فكثيرا ما تخرج بهذا العلاج فإن لم تخرج وإلا⁷ فحاول إخراجها بالجفت اللطيف الذى هذه صورته:



Marsh



Huntington

Fig. 46

- به الشمس 4. AV. 3. om. MV. 2. MV, om. cett. H. والرخام 1. به الشمس cett. 5. PV. BH. الاذن للشمس M, الاذن الشمس P, من الرأس B, ببعض الرأس والتعطيس V, بحركة الرأس والتعطيس M, 6. H. من الاذن بالتعطيس A, من الرأس بالتعطيس P, بالتعطيس 7. om. V.

If it comes out with the tweezers, good. But if not, try to extract it with a fine blunt hook slightly curved. And if this does not bring it out, make a bronze tube¹ and introduce the end of the tube well into the meatus of the ear and fill in round with wax softened with oil so that there may be no outlet save through the tube; then suck it out with all your breath; it will often come out with this. But if it does not come out with these means we have described, take turpentine resin or bird-lime, a very little; twist some compact cotton wool on the end of a probe and put this on the tip; then introduce it gently into the ear after you have dried out all the moisture from the ear. But if your treatment so far is unavailing, then be quick and incise before an abscess or spasm supervene. Now this is the way to incise: first, the patient's cephalic vein should be cut and blood drawn, in proportion to his strength; then seat the patient in front of you and turn his ear upwards; make a small incision at the lobule of the ear in the depression there (the incision should be crescent-shaped) until you reach the stone; then extract it with whatever instrument you may. Immediately afterwards sew up the incision and dress it till healed.

If the object that falls into the ear is one of those grains that grow or

¹ The hook (fig. 46A) and tube (fig. 46B) are shown in Cremona version only.

Fig. 46A



Fig. 46B



فإن خرجت بالجفت وآلا فحاول إخراجها بصنارة عمياء لطيفة قليلة الانثناء فإن لم تخرج بذلك وآلا فاصنع أنبوبة من نحاس وأدخل طرف الأنبوبة في ثقب الأذن نعمًا وسد ما حوالى الأنبوبة بالقيرمطين بالدهن لئلا يكون للريح طريق غير الأنبوبة ثم اجذبها⁸ بريحك جذبا قويا⁸ وكثيرا ما تخرج بذلك، فإن لم تخرج بما وصفنا وآلا فخذ من علك الأنباط او من العلك المدبر الذى يؤخذ به الطير شيئا يسيرا فضعه في طرف المرود بعد أن تلف عليه قطنة محكمة ثم أدخله في ثقب الأذن برفق بعد أن تتشف الأذن من الرطوبة، فإن لم تخرج بجميع ما وصفنا فبادر الى الشق قبل أن يحدث الورم الحار او تشنج²⁰، وصفة الشق أن تفصد العليل في القيفال أولا وتخرج له من الدم على قدر قوته ثم تجلس العليل بين يديك وتقلب أذنه الى فوق وتشق شقا صغيرا في أصل الأذن عند شحمته في الموضع المنخفض منها ويكون الشق هلالى الشكل حتى تصل الى الحصة ثم تنزعها بما أمكنك من الآلات ثم تخيط الشق من حينك بسرعة وتعالجه حتى يبرأ²⁵،

وأما إن كان الشىء الساقط في الأذن من أحد الحبوب التى

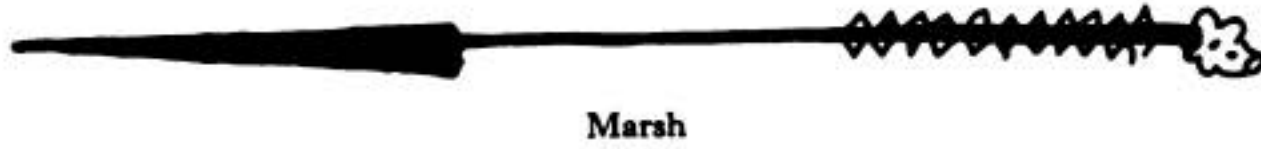
M. بالمص بالقوه H. بريقك جذبا قويا. 8.

swell, then try to extract it by the means already mentioned. If it does not respond to your efforts to get it out, take a fine narrow scalpel like this (fig. 47) and with it attempt to cut out whatever kind of grain has entered the ear. You should not do this except when you are sure that this grain has become moist by reason of the vapours of the ear, so that you may cut up the grain into several small pieces. Then you may extract them with a blunt hook or fine-headed tweezers, or by suction, as we have mentioned; for their extraction will be easy.

As for water getting into the ear, the patient should first employ sneezing excited by ptarmica, his ear¹ having been plugged with a piece of teased-out cotton; he should lie upon that ear in which the water is; and if it so come out, well and good. But if not, take a number of small stones about a finger's length, thin and smooth, and warm them a little in the fire; and have the patient put one of them into the meatus of the ear and let him hop on that one foot on that side; and, with another stone, tap upon the one put into the ear; he should keep this up with stone after stone till all the water has come out. Sometimes the water is extracted by taking a reed or quill and introducing one end into the ear; then the other end is set alight till the greater part of it is burnt; then repeat time after time with more quills till all the water is got out. Or else suck it out with a cannula as described for a stone.

¹ The MSS. vary between 'ear' and 'ears'; but should this be rather 'nostrils'?

تربو وتنتفخ فحاول إخراجها بما ذكرنا فإن لم يجبك الى الخرج والّا
فخذ مبضعا رقيقا لطيفا على هذه الصورة :



Marsh



Huntington

Fig. 47

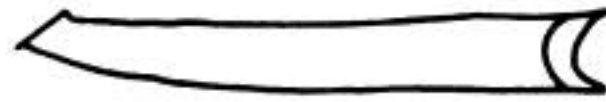
وحاول به قطع ذلك النوع من الحبوب الساقطة فى الأذن وإنما
30 تفعل ذلك اذا تيقنت أن تلك الحبة قد ترطبت ببخار الأذن حتى
تصيرها قطعاً صغاراً كثيرة ثم تخرجها بالصنارة العمياء⁹ او بجفت
لطيف او بالمص كما ذكرنا فإنه يسهل إخراجها ،

وأما الماء الداخلى فى الأذن فينبغى أن يستعمل العليل
العطاس بالكندس أولاً وقد ملأ أذنه¹⁰ بشئ من القطن البالى وهو
35 مضطجع على تلك الأذن التى فيها الماء فإن خرج بذلك والّا فتأخذ
حصيات كثيرة على طول الأصابع رقاقاً ملساً فتدقها بالنار قليلاً ويدخل
العليل منها واحدة فى ثقب أذنه ويحجل على رجله الواحدة من تلك
الجهة ويضرب بحجر آخر على الحجر الذى فى الأذن فلا يزال يفعل
ذلك بحصاة حصاة حتى يخرج جميع الماء ، وقد يخرج الماء بأن
40 يؤخذ من البردق أو من الريش واحدة ويدخل طرفها الواحد فى
الأذن وتقد الطرف الآخر بالنار حتى يحترق أكثره ثم تعيد ريشة
أخرى تفعل ذلك مرأت حتى يخرج جميع الماء او تجذبه بالأنبوبة على
ما تقدم فى الحصاة ،

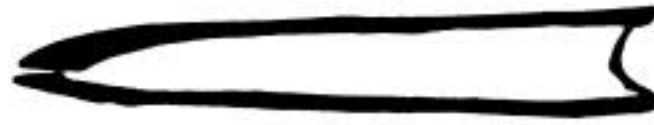
9. om. AHP. 10. اذنيه AMP.

As for the extraction of a creature getting into the ear, look to see if it is small of body, such as a flea or the like, in which case treat by those means mentioned in the section. But if it has a large body, conspicuous to the touch, try to get it out with tweezers and hooks; for of all things that stick in the ear this is the easiest to extract. As for the extraction of a worm generated in the ear, when you have unavailingly treated it by those methods mentioned in the section in the treatise on instillations, you will need to examine the ear in the sunlight; and if you can see any worms, extract with tweezers or fine hooks. But if you cannot see any, then take a cannula of this form (fig. 48) narrow in its lower part, broad above; and introduce the narrow part into the ear as far as the patient can bear it; then make strong suction through it, repeatedly, till all the worms are extracted. But if they do not come out in response to your treatment, plug all round the cannula with wax as bidden in treating for a stone. If nothing will bring them out, employ the instillations which I mentioned as having been tried by the Ancients for killing worms; you will find that in the treatise on instillations.

وأما إخراج الحيوان الداخل فيها فانظر فإن كان صغير الجثة
 45 كالبرغوث ونحوه فعالجه بما ذكرت في التقسيم وأما إن كانت جثته
 كبيرة تظهر للحس فحاول إخراجها بالجفت والصناير وأمره أسهل من
 جميع ما ينشب في الأذن، وأما إخراج الدود المتولد في الأذن
 إذا عالجتها بما ذكرنا في التقسيم في "مقالة القطورات ولم ينجع
 علاجك فينبغي أن تنظر إلى الأذن في الشمس فإن ظهر إليك شيء
 50 من الدود فأخرجه بالجفت أو بالصناير اللطاف فإن لم يظهر إليك
 منها شيء فخذ أنبوبة هذه صورتها :



Marsh



Huntington

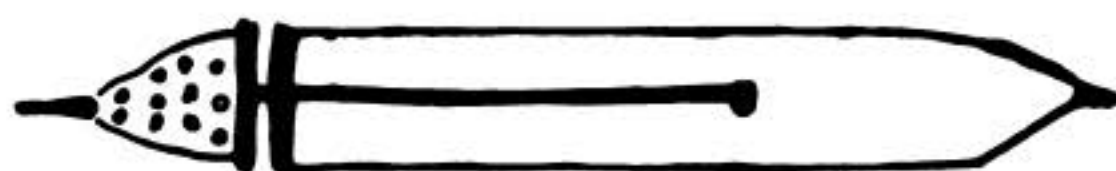
Fig. 48

ضيقة الأسفل واسعة الأعلى وأدخل الطرف الرقيق في الأذن على قدر
 ما يحتلمه العليل ثم مض به مضاً قوياً تفعل ذلك مرأت حتى يخرج
 جميع الدود فإن لم يجبك للخروج فسدد حول الأنبوبة بالشمع كما
 55 ذكرت لك في الحصة فإن لم تخرج بما ذكرنا فاستعمل القطورات
 التي⁽¹²⁾ ذكرتها وقد⁽¹²⁾ جرّبتها الأوائل في قتل الدود وتجدد⁽¹³⁾ ذلك في

11. H, cett. وفي. 12. P, cett. قد. 13. AH. ونحو.

The instillation of oils or drugs should be done with an instrument like this (fig. 49), as you will see; you make it of silver or bronze, narrow at its lower end, with a small perforation, and wide at its upper part. If you wish, you may make the obturator which goes in the cannula of strong bronze; or, if you like, take a probe and wrap cotton wool tightly round its tip; then pour into the cannula oil, juices, or whatever of these remedies you want, with the cannula in the ear. Then introduce the probe with cotton wool on it and press moderately until the oil is ejected into the meatus and the patient feels it enter. Let that which you put into the ear first be slightly warmed at the fire; and be careful that it be neither very hot nor very cold, for the ear is not suited to bear that.

مقالة القطورات ويكون صبك الأدهان والأدوية في الأذن بهذه الآلة
وهذه صورتها :



Marsh



Huntington

Fig. 49

كما ترى تصنعها من فضة أو نحاس ضيقة الأسفل فيها ثقب صغير
60 واسعة الأعلى وإن شئت أن يكون المدفع الذي في جوف الأنبوبة من
نحاس محكم وإن شئت أخذت مرودا ولففت في طرفه قطنة لقا محكما
ثم تلقى الدهن أو العصارة أو ما تريد من هذه الأدوية في الأنبوبة
وهي في الأذن ثم تدخل المرود بالقطنة من فوق وتعصر به يدك
عصرا معتدلا حتى¹⁴ يندفع الدهن في جوف¹⁵ السمع ويحس¹⁵ به العليل
65 داخلا، وليكن ما تصب في الأذن قد دق في النار قليلا واحذر
أن يكون الشيء الذي يقطر فيها باردا جدا أو حارا جدا فإن
الأذن لا تحتمل ذلك،

P. القمع حتى يحس B, الانبوبة ويحس. 15. M. <لا> 14.

CHAPTER SEVEN. On the treatment of obstructions in the ear.

Infants sometimes are born with an imperforated auditory meatus. Some people also get an obstruction in the passage of the ear, either from an injury or from flesh¹ growing in it. Sometimes this obstruction is at the bottom of the ear out of sight, but sometimes it occurs a little outside the passage and is invisible. The sort which occurs in the depths of the ear and is invisible is, in general, difficult to cure. As for that which is within sight, set the patient's ear in the sun and examine it; and if you see that the object is something external you should make an opening with a fine scalpel like this (fig. 50). Let its extremity be slightly broad, with a sharp point; while the rest of the scalpel should be smooth on both sides so as not to harm the ear. But if the obstruction be from flesh growing in the auditory meatus, catch it with a fine hook and cut it, with the utmost gentleness, till all the flesh is gone. If the obstruction be in the depth of the ear, take a fine smooth probe and warm it a little in the fire; then push it into the meatus. If you feel

¹ i.e. polyp or granulation.

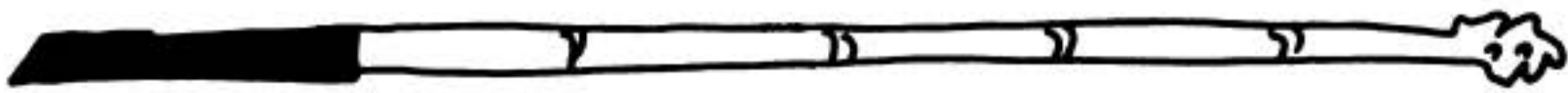
BOOK TWO. CHAPTER SEVEN

This chapter also is taken directly from Paulus (VI. 23) who himself drew upon Celsus (VII. 8). Both authors describe a slender knife; Paulus recommends that used for pterygium, the pterygotome. In dealing with what seem to be aural polypi Albucasis gives a far more exact description of the

special knife than the older writers. It is to be not merely a slender scalpel (*mūbda'*) but one that has its edges guarded almost up to the extremity; which alone is to be sharp on both sides and at the point itself. We can think of it as like that kind used sometimes nowadays for opening a quinsy.

الفصل السابع فى علاج السدّ العارض للأذن

قد يخرج بعض الأطفال من بطون أمهاتهم ومسامع آذانهم غير مثقوبة، وقد يعرض أيضا لبعض الناس سدّ فى مجرى الأذن عن جرح أو لحم نابت فيها وهذا السدّ قد يكون فى عمق ثقب الأذن لا يدركه البصر وقد يعرض الى خارج الثقب قليلا ويدركه البصر، فالذى يعرض فى عمق الأذن ولا يدركه البصر يكون فى أكثر الأحوال "عسر البروء"، والذى يدركه البصر فينبغى أن تضع أذن العليل فى الشمس وتنظر فيها فإن رأيت السدّ ظاهرا فافتحه بمبضع لطيف تكون هذه صورته:



Marsh

Fig. 50



Huntington

يكون طرفه فيه بعض العرض قليلا محدودا² بعضه وسائر الموضع أملس الجانبين لكلا يؤذى الأذن، فإن كان السدّ عن لحم قد نبت فى مجرى الأذن فامسكه³ بصنارة لطيفة واقطعه برفق شديد⁴ حتى ينتزع جميع اللحم، فإن كان السدّ فى عمق الأذن فخذ ميلا لطيفا أملس فدقّه فى النار قليلا ثم دسّه فى مجرى الأذن فإن أحسست بالسدّ

1. HPS <فى الشمس>. 2. P. محدود ABM, محدود. 3. P. عن البرودة.

4. HMP. سد يد. 5. B. بان السد باق.

the obstruction (what time the patient will experience hardness of hearing), seek to perforate it gently, being careful not to injure the nerve of the ear. Then put in a plug the width of the meatus, which you will have anointed with Egyptian ointment; do this for some days till you are sure that the wound is healing. Or take a plug and dip it into water and sprinkle it with powdered vitriol and use that. If you perceive the ear swelling with an abscess you should remove the plug and put in its place another previously prepared by soaking in wax made with oil of roses, till the abscess has subsided; then dress till it is healed. If a haemorrhage occur, dip a sponge or piece of material in cold water and put it on the ear, and apply the rest of the treatment to stop haemorrhage mentioned in the treatise on instillations.

15 مع⁶ ما يجده العليل من ثقل السمع⁷ فرم بطنه⁷ برفق وتحفظ من أن تجرح
 عصبه الأذن ثم صير في الأذن فتيلة على قدر سعة الثقب قد لثتها
 في المرهم المصرى تفعل ذلك أيا ما حتى تأمن من التحام الجرح أو
 خذ فتيلة فبلها في الماء وذر عليها زاجا مسحوقا واستعملها فإن
 رأيت الأذن قد تورمت ورما حارًا فينبغي أن تخرج الفتيلة وتبدلها
 20 بفتيلة أخرى قد لثتها في قيروطى قد صنع بدهن الورد حتى تسكن
 الورم الحار ثم تعالجها الى أن تبرا، فإن حدث نزف دم فاغمس
 اسفنجة أو خرقة في الماء البارد وضعها على الأذن واستعمل سائر
 العلاج الذى يقطع النزف المذكور في مقالة القطورات،

6. om. AHP. 7. SHV, A يوم بطنه, P قدم بطنه, M فرم بطنه,
 B. قدم بطنه.

CHAPTER EIGHT. On the treatment of warts on the eyelids.

These warts which occur on the eyelids are sometimes humid, sometimes dry. You should hold them with forceps or a hook, and cut them away from the roots with a scalpel; then put powdered vitriol on the place. If there is bleeding from them, cauterize them with a fine lenticular cautery. Cauterization of them after excision is best, for they often return when a part of their roots is left behind; but when they are cauterized the roots are burnt and they will not come back.

الفصل الثامن في علاج الثآليل التي تعرض في الأجفان

هذه الثآليل التي تعرض في جفون العين قد تكون رطبة
وتكون يابسة فينبغي أن تمسكها بمنقاش أو بصنارة وتقطعها بالمبضع
من أصولها ثم تحمل على الموضع زاجا مسحوقا ، فإن نزل منها دم
فاكوها بعكواة عدسية لطيفة وكيها أفضل بعد القطع وكثيرا ما تعود
إذا بقي من أصولها شيء وإذا كويت بالنار أحرقت تلك الأصول ولم
تعد ،

CHAPTER NINE. On the treatment of stones occurring in the eyelids.

There often occurs in the eyelids a thing resembling a hailstone in its strength and hardness, and therefore called 'hail'. It is actually a collection of thick humours in the upper or lower lid. The operative treatment for it is thus: examine; and if the stone is external on the outer aspect of the lid, and mobile in all directions, dealing with it is simple. You make above it a transverse incision; then scrape gently around it till it is free; then catch it up with a hook and cut it away. If it is in such a position that you cannot excise it without cutting through the lid, that will not harm the patient at all. If the incision be big, gather it up with a suture and dress it till it heals. If it be small, it will be no trouble, for ointment will restore it and heal it. If the stone is rather toward the inner aspect of the eyelid, then invert the lid and catch up the stone with a hook—you will not need to incise the lid—and cut it all round. If the lid is pierced in the cutting, it will do no harm at all. Then, after cutting away the stone, wash the eye with salt water; then treat with cicatrizing medicines till healed.

BOOK TWO. CHAPTER NINE

This complaint is the same as that described by Celsus (vii. 7) and Paulus (vi. 16) and others, as *chalazion*. The operation and the simple instruments given here are copied from them and need no comment.

الفصل التاسع في علاج البرد المعارض في أجفان العين

كثيرا ما يعرض في الأجفان شي^٥ يشبه البرد في شدته وصلابته ولذلك سمي^١ بالبرد وهو اجتماع رطوبة غليظة في الجفن الأعلى والجفن الأسفل ، والمعمل فيها^٢ أن تنظر فإن كانت البردة بارزة في ظاهر الجفن تتحرك الى كل ناحية فامرؤها سهل فشق عليها شقًا بالمعرض ثم أسلخها من كل جهة برفق حتى تتخلص ثم علقها بالصنارة واقطعها ، فإن لم يتهيأ لك قطعها إلا بعد أن تنفذ الجفن بالقطع فلا يضّر العليل ذلك شيئا فإن كان الشق كبيرا فاجممه بالخياطة وعالجه حتى يبرأ وإن كان صغيرا فلا بأس عليك منه فسيان المرهم يجبره ويلحمه ، فإن كانت البردة مائلة الى داخل الجفن نحو السطح الداخل فاقطب الجفن وعلق البردة بصنارة من غير أن تحتاج الى شق واجتزها^٣ من كل جهة فإن انفذت الجفن بالقطع لم يضّر ذلك شيئا ، ثم اغسل العين بعد قطع البردة بالماء المالح وعالج الموضع بما يلحم^٤ حتى يبرأ العليل ،

١. H, سميت cett. 2. A. فيها 3. M, اجزها 4. H. يلحمه

CHAPTER TEN. On the treatment of hydatid in the upper lid.

Hydatid is fat which arises in the folds of the upper lid. It is a disease chiefly occurring in children, irritating their eyes, giving them morning catarrh; they are unable to look full into the light of the sun, since they get an immediate secretion of tears. And for that reason you will find them lying always on their faces, and they also sleep on their faces; and the eyelids below the eyebrows are moist and covered with swellings, while the hydatid stands out prominently; and when you press upon the place with your finger you can feel the fat beneath it. The manner of operating is for the patient to let his head rest in your lap. Then you take a scrap of linen and prepare a pad of it. Make it into a circle of sufficient size to enclose the whole of the hydatid on all sides, then place it on it and squeeze with your fingers on all sides, so as to gather up the hydatid in the centre of the circle. Then in the middle of this humidity make a crosswise incision with a lancet, but do not let the incision be larger than that made for a venesection. As to the depth, the skin should be incised right through till you come to the hydatid, which in most cases will come out from the incision, in the shape of a white piece of fat. Draw it out with a cloth rolled between your fingers, turning your hand to right and to left till it is separated. Be careful not to go so deep with your scalpel that it sticks in the eye and injures it. If you do not see the hydatid at the first incision, you must gently cut a little deeper till it comes forth, then draw it out as described. Then dip some cloth in vinegar and water, apply to the place and bind it up with pads.

BOOK TWO. CHAPTER TEN

This chapter is derived from Paulus Aegineta (VI. 14). We have followed Channing in translating *al-shirnāq* as 'hydatid' from the corresponding word in Paulus; though the use of the word differs from the modern. Celsus (VII. 7) uses the phrase . . . *vesicae pingues gravesque* . . . inspiring Albucasis to give the pathology as 'fat arising in the

folds of the upper lid'. Haly Abbas and Avicenna likewise copy the same description. The two-edged scalpel does not call for either figure or description, or comment here, except to note that the same term *mibda' nashl* is used here as in chapter 2. See note to chapter 46.

الفصل العاشر فى علاج الشرناق الذى يعرض فى جفن العين
الشرناق هو¹ شحمة تكون² فى طبقات الجفن الأعلى وأكثر ما يعرض
ذلك للصبيان وهو يثقل أعينهم وتعرض لهم النزلات فى الأسحار
ولا يقدرّون على³ النظر الى ضوء الشمس من أجل أن الدمع يسرع
اليهم ولذلك تراهم يتكئون⁴ على وجوههم دائما وعليها ينامون وتكون
5 أجفانهم تحت الحواجب رطبة قد علاها نفخ ونتو الشرناق ظاهر
للعيان ومتى كبست الموضع بأصابعك أحسست بالشرناق بينهما، ووجه
العمل أن يضع العليل رأسه فى حبرك ثم تأخذ خرقة كان فتهبى
منها فتيلة وتصنع من تلك الفتيلة دائرة على قدر ما يحوط بالشرناق
10 من كل جهة ثم تضعها عليه وتكبس بأصابعك⁵ من كل جهة لتجمع
الشرناق فى وسط الدائرة ثم تشق فى وسط تلك الرطوبة بالمبضع
النشل شقا بالعرض ولا يكون الشق أكبر من الشق الذى يكون فى
الفصد وأما فى العمق فينبغى أن تشق الجلد كله حتى تصل الى
الشرناق وفى أكثر الحالات يبرز الشرناق من الشق على هيئة قطعة
15 شحم بيضاء فتجذبها بخرقة قد لفتتها بين أصابعك الى خارج وأنت
تدير يدك يمينا وشملا حتى تتبرأ واحذر أن تزيد فى الشق لئلا
ينصل المبضع بالعين⁶ فيؤذيها، فإن لم يظهر لك الشرناق فى أول
الشق فينبغى أن تزيد فى الشق قليلا برفق حتى يبرز الشرناق ثم
تجذبه كما قلنا ثم تغس خرقا فى الخل والماء وتضعها على الموضع

1. BP. يعرض من. 2. AH. تتكون. 3. om. AV. 4. codd. ينكبون.

5. om. H. 6. M, العين الى المبضع cett. تصل.

There are some who grind up salt and put it in the hollow of the incision to liquefy thereby the remains of the humidity. Then dress till healed. If an effusion occur in the place, treat with sedative plasters till healed.

20 وتشدّه برفادة، ومن الناس من يسحق ملحا ويضعه في جوف الشقّ
ليذوب ما بقى من تلك الرطوبة، ثمّ تعالجه حتى يبرأ، فإن حدث
في الموضع ورم حارّ فعالجه بالأضدة المسكّنة الى أن يبرأ،

CHAPTER ELEVEN. On the various methods of blepharoplasty.

When superfluous lashes grow on the eyelid outside their natural place, below the natural lashes, and continue, they injure the eye and give rise to many kinds of disease, such as chronic lachrymation, dropping of the eyelids (ptosis), and whiteness and opacity, eventually resulting in the destruction of the eye. The plastic operation on the eye is carried out in four ways: by the actual cautery; by caustic in the way mentioned above in the book on cauterization; by incision and suture; or with canes, as I shall describe.

You should place the patient's head in your lap, then with your left hand turn out the eyelid. Now if it thus becomes everted, good; otherwise introduce a threaded needle beneath the eyelid and pass the needle up; let that be near the hair itself.¹ Then draw the thread up with the lid and invert the lid with a probe; then make an incision on the inside of the lid below the superfluous lashes with the lancet, from the greater to the lesser angle. Then draw out the thread and put beneath the lid a small pad of cotton or linen; then mark with ink on the eyelid the shape of a myrtle leaf. The shape should be according to the amount you wish to raise the lid, and varies in different people. In some cases you should cut away a fair amount in proportion to the ptosis but in others a smaller incision is enough; all this in due proportion to the extent of the ptosis. Then with a scalpel incise over the two lines you have marked, beginning at the greater angle and going toward the lesser angle; and let one incision be close to the natural lashes, at a distance of about the breadth of a probe. Then introduce a hook

¹ Cremona adds 'that is, near the edge of the lid where the hairs (or lashes) are growing'.

BOOK TWO. CHAPTER ELEVEN

This chapter on *tashmir*, lit. 'tucking', was taken direct from either Paulus (VI. 8) or Aetius (VII. 71 and 72), who both copy Leonides, all being indebted really to Celsus (VII. 7). The instrument Celsus describes for use in this operation was 'a needle like a *spatha*'. Now a needle with a broad-edged blade in this fashion would very much resemble the delicate scalpel employed generally now in operations on or about the eye, and would have been the model for the two-edged

scalpel mentioned in this chapter. However, no figure, nor further detail, is given, so the correspondence between the Arabic and the Roman instruments must remain only a likelihood. After acknowledging his debt to the Ancients for this procedure, Albucasis goes on to describe another of his own, describing instruments that are new, at least for this and similar undertakings. The first seems to be an eye speculum, with three hooks to gather and hold up the upper lid. The Marsh figure

الفصل الحادى عشر فى ضرب تشمير المين

اذا نبت فى جفن المين اشغار زائدة على غير المجرى الطبيعى تحت الأشغار الطبيعية وأزمنت فإنها تضر بالمين وتحدث ضرورياً من الأمراض كالداء مع الدائم واسترخاء الأجفان والبياض والغلظ حتى يكون⁵ ذلك سبباً لبطلان المين، وشمير المين على أربعة أوجه إما بالكي بالنار وإما بالدواء الحاد على ما تقدم فى باب الكى وإما أن يكون التشمير بالقطع والخياطة أو بالقص على ما أنا ذاكروه،

ينبغى أن تجعل رأس المليل فى حبرك ثم تقلب جفن المين بيدك اليسرى فإن انقلب وألفأ دخل ابرة فيها خيط من أسفل الجفن¹⁰ وتتخذ الإبرة بالخيط من فوق ويكون ذلك قرب الشعر نفسه وتجذب

الخيط الى فوق بالجفن وتقلبه بالمروء ثم تشق فى باطن الجفن دون الشعر الزائد بالمبضع النشل من الملق الأكبر الى الملق الأصغر ثم تسل الخيط وتضع تحت الجفن رفادة صغيرة من قطن او خرقة ثم تعلم على الجفن بالمداد مثل شكل ورقة الآس إلا أنه ينبغي أن يكون الشكل على قدر ما تريد من رفخ الجفن لأنه قد يختلف¹⁵ فى ذلك

الناس فمنهم من يحتاج الى أن تقطع من الجفن قدراً صالحاً على قدر ما استرخى الجفن ومنهم من يحتاج الى قطع أقل كل ذلك على قدر استرخاء الجفن، ثم تشق بالمبضع على الخطتين اللذين علمت وتبدأ من الملق الأكبر الى الملق الأصغر ويكون الشق الواحد²⁰ بالقرب من²⁰ الشعر الطبيعى بمثل غلظ المروء ثم تدخل الصنارة فى أحد

AM. بالمعرض من 2. cett. ذلك فى 1. M.

into one angle of the skin and peel it all off; then join the edges with a needle and a fine woollen thread and wipe away the blood; and stick the ends of the threads to the eyebrow with adhesive, if you like; but if you do not it does not matter. Then let the suture and the threads remain for about three or four days, then dress. If you like, you may leave the wound without suture and treat it with drying medicaments and styptics; then the eyelid will be lifted as the wound heals and comes together; but suture is better. The Ancients mention this method of operating. It involves some burden for the patient; but the operation is good and safe. Yet another way of operating is to mark on the eyelid the figure of a myrtle leaf as we have described; then lift the eyelid with three hooks, either separate or joined thus (fig. 51). Then cut away the superfluous lid with a small pair of scissors

indicates olive points to the hooks to prevent damage to the eye by any sharp point. The use of the plain hook is found in Celsus' detailed instructions for operative ophthalmology; but the idea of developing it into a speculum seems quite new and is not found in any extant work prior to Albucasis; nor does the idea appear again until Paré described and illustrated a simple curved piece of wire . . . *longius abducendis palpebris oculo-que immoto continendo* . . . (IX. 24). The second innovation was the introduction of fine scissors to remove the superfluous skin. Two excellent drawings (fig. 52) are given of this instrument, the Huntington one being especially good. The apparent discrepancy

between the two may be thus explained: that, while the Huntington figure clearly shows the two blades, the Marsh MS. puts the two blades together giving the appearance of one thick one; while the joint is of different design. Scissors are described by Celsus; but his word *forfex* is also, and more commonly, used for forceps; while the Greek equivalents were *ὀσάγρυπα* and *ρίζάγρυπα* respectively for catching a fragment of bone or a root of a tooth. The making and use of such fine scissors as those described and illustrated here was not thought of before. Guy de Chauliac copied this operation from the Arabic writings; and thereafter it became lost.

زاويتي الجلد ثم تسلخه كله ثم تجمع بالخياطة الشفتين³ بإبرة وخيط
صوف رقيق وتمسح الدم وتلصق ما فضل من الخيوط على الحاجبين
ببعض الأشياء المتدبقة إن شئت أن تفعل ذلك والآن⁴ فما تبالي⁵، ثم
تبقى الخياطة والخيوط الى نحو ثلاثة أيام او أربعة ثم تعالجه، وإن
²⁵ شئت تركت الجرح من غير خياطة وتعالجه بما يجفف ويقبض فإن الجفن
يرتفع عند ختم الجرح واجتماعه والخياطة أفضل، فهذا الوجه من
التشمير ذكرته الأوائل إلا أن فيه مؤونة على العليل وهو من جيد
العمل ولا خطر فيه، ووجه آخر في التشمير أيضا وهو أن تعلم على
الجفن شكلا كشكل ورقة الآس كما وصفنا ثم ترفع الجفن بثلاث صنانير
³⁰ تكون مفترقة⁵ او مجموعة على هذه الصورة:

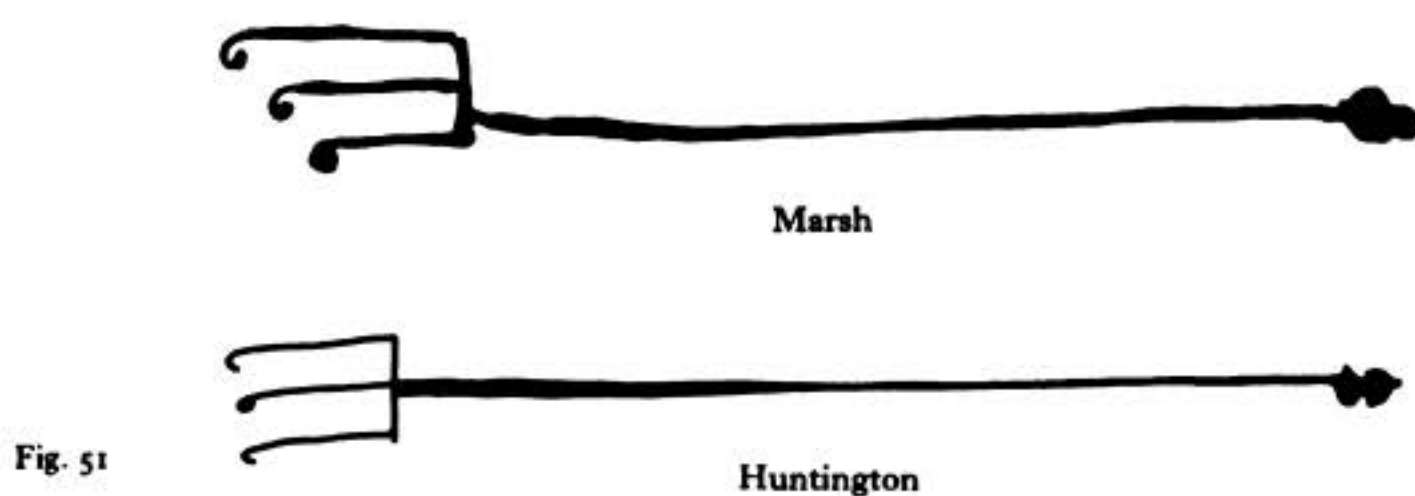


Fig. 51

3. BMV. الشقين. 4. codd. an leg. فلا تبالي. 5. MP، متفرقة،
HV. مفتوحة.

with an even incision. The scissors are of this pattern (fig. 52). But if you cannot conveniently hold with the hooks, take a threaded needle and introduce it into the middle of the marking; and put another thread through near the greater canthus, and a third thread near the lesser canthus. With your fingers hold the threads evenly and then raise your hand evenly and you will raise up the whole of the marked skin as we have said. Then bring the edges together with a suture and dress till healed. But if in your incision, or the opening you have made, a swelling arises, then allay the swelling with wax and similar sedatives. Sometimes the lower lid also has the lashes inverted. For this you should use any of the methods we have mentioned: the incision and suture, and the operation by the actual cautery and by caustic. (The operation by the actual cautery or caustic) is more effective, and easier on the patient, than incision and suture, (but incision and suture) is more workmanlike in either lid.

ثم تقطع ما فضل من الجفن بمقص صغيرة على هذه الصورة قطعاً
باعتدال :



Fig. 52

Huntington

فإن لم يمكنك حبس الصنانير ولم تستو لك فخذ إبرة فيها خيط
وأدخلها في وسط الشكل وأدخل خيطاً آخر قرب المأق الأكبر وخيطاً
ثالثاً قرب المأق الأصغر واجمع بين أصابعك الخيوط باعتدال ثم ارفع
35 بها يدك رفعا معتدلاً وارفع⁶ الجلدة المعلم عليها كلها كما وصفنا ثم
اجمع شفتي الجرح بالخياطة وعالجه حتى يبرأ، فإن عرض ورم حار
عند قطعك أو شقك فسكن ذلك الورم بالقيروطى ونحوه من المراهم
المسكنات، وقد يعرض للجفن الأسفل أيضاً أن تنقلب أشفاره فينبغي
40 أن تستعمل فيه ما ذكرنا من القطع والخياطة⁷ والتشمير بالنار وبالدهن⁸
الحاد⁹ والتشمير بالنار أو بالدهن الحاد⁸ أبلغ⁹ وأخف على العليل
من القطع والخياطة⁷ والقطع والخياطة¹⁰ فيهما¹¹ اصنع¹²

6. ABMV. واقطع.

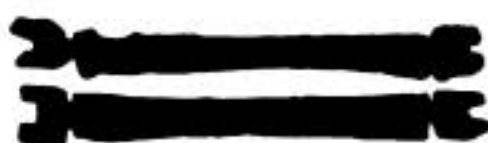
7. om. BHS. 8. addidi. 9. BM. افضل. 10. addidi. 11. فيهما M.

12. B. اجمع. In loco verborum (lin. 39) ad اصنع (lin. 42):

A. فلنفعل به كذلك من قطع وخياطة وداود ودهن حاد

Trimming the lid by means of canes is done as follows: you invert the eyelid and cut the inner slit as I have described; then you prepare two slender canes or rods of a length equal to that of the eyelid and a breadth less than that of a scalpel; and at either end of each you make a notch to hold the threads. Then gently put them together over the superfluous part of the eyelid and tie them firmly together at both ends and leave for a few days; for the ligated flesh will necrose and turn black and putrefy and eventually fall away spontaneously. But if it is slow in sloughing, cut off with shears; then dress till healed. And when it is healed the eyelid will be raised and the lashes will no longer irritate the eye. Now this is the figure of the canes; you should prepare them exactly in this shape and of this length and breadth (fig. 53).

التشهير بالقصب يكون على هذه الصفة وهو أن تقلب الجفن
 45 وتشق الشق الذى من داخل على ما وصفت ثم تصنع قصبتيْن او
 خشبتين رقيقتين طولهما على طول الجفن وعرضهما أقل من عرض
 مبضع وقد قرضت فى أطرافهما من كلتى الجهتين حيث تتمسك الخيوط
 ثم تجمعهما بلطف على ما فضل من جفن العين وتشد القصبتين من
 كلتى الجهتين شدا وثيقا وتتركه أياما فإن الجلد المشدودة تموت
 50 وتسود وتعفن حتى تسقط من ذاتها فإن أبطأت فاقرضها بالمقراض
 ثم تعالجه حتى يبرأ، فإذا التحم ارتفع الجفن ولم تنخس الأشعار
 العين، وهذه صورة القصبتين تصنعها على هذا الشكل وهذا
 المقدار فى الطول والعرض بعينه:



Marsh



Huntington

Fig. 53

CHAPTER TWELVE. On the removal with the needle of irritating lashes from the eye.

If it be one or two hairs the operation will be to take a fine needle, thread it with a fine smooth silk, bring the ends together, and knot them with a tiny knot; the thread should be about a span in length. Then in the loop insert another fine thread, shorter than the first, and join the ends with a knot if you wish. Then let the patient put his head in your lap in full sunlight, so that the operation may be clearly seen, because it is very fine work. Then introduce the needle with the loop to the root of the superfluous hair and run it quickly through the eyelid till you make it come out above the natural hair. Then draw the thread to the top of the loop and introduce that hair into the loop if it be one, two, or three, but not more. Then draw away your hand with it until the hair emerges with the loop on the eyelid among the natural hair. If you pull the loop and the hair does not come out with it, you draw the loop down by means of the thread which you have previously passed through it, until the loop comes out at the upper perforation. Then put the hair back in and draw them both up; keep on until the hair rises up in the upper perforation and you can see it. Then extract loop and thread and take them both out, and bind the eye and leave it bound for two or three days till the hair be fixed in its place and there is regeneration of flesh over it. If the hair be short, put with it a long natural hair so that it may be raised together with that; or let the hair grow till it reach a greater length, then raise it.

BOOK TWO. CHAPTERS TWELVE TO
FOURTEEN

The paragraphs on ectropion and entropion
are transcriptions of Paulus Aegineta.

الفصل الثانى عشر فى رفع الشعر الناحس¹ من² العين بالإبرة
إذا كانت شعرة أو شعرتين العمل فى ذلك أن تأخذ إبرة
رقيقة فتدخل فيها خيطا³ من حرير⁴ رقيق أملس ثم تجمع طرفيه⁵
وتعقد هما عقدة لطيفة جدًا وليكن طول الخيط نحو شبر ثم تركب فى
5 الأنشودة خيطا آخر رقيقا دونه فى القصر واعقد طرفيه إن شئت ثم
يضع العليل رأسه فى حرك وليكن بقرب الشمس ليستبين العمل فإنه
عمل دقيق ثم تدخل الإبرة بالأنشودة فى أصل الشعرة الزائدة
وتنفذها فى الجفن بالعجلة حتى تخرجها من فوق الشعر الطبيعى ثم
تجذب الخيط الى فوق الأنشودة وتدخل فى الأنشودة تلك الشعرة
10 إن كانت واحدة أو اثنتين أو ثلاث لا أكثر ثم تجذب يدك بها حتى
تخرج الشعرة مع الأنشودة فى الجفن مع الشعر الطبيعى فإن جذبت⁶
الأنشودة ولم تخرج الشعرة معها جذبت الأنشودة⁷ الى أسفل
بالخيط الذى كت ركبت فيها⁸ حتى تخرج الأنشودة من الثقب الأعلى
ثم تعيد الشعرة فيها وتجذبهما تفعل ذلك حتى ترتفع فى الثقب
15 الأعلى⁹ وتراها رأى العين، فحينئذ فسل الأنشودة والخيط
وأخرجهما وشد العين وأتركها مشدودة يومين أو ثلاثة حتى تلزم
الشعرة مكانها وينبت عليها اللحم، فإن كانت الشعرة قصيرة فإما أن
تضيف اليها شعرة طويلة من الشعر الطبيعى فترتفع معها وإما أن
تتركها حتى تطول بعد مدة فحينئذ ترفعها،

1. A. المنقلب. 2. AM, فى cett. 3. M. ابرسيما. 4. B, cett. طرفاه.
5. B. حدثت, P. خرجت. 6. AM. بالخيط الى اسفل. 7. om. HPS.

CHAPTER THIRTEEN. On entropion occurring in the upper eyelid.

The eye that suffers this inversion of the lid is called 'leporine' (i.e. hare-eye). Now sometimes this inversion is natural, sometimes acquired. It is acquired either from the cicatrization of an injury, or an incision, or cauterization, or the like. The idea of the operation is to excise the scar, separate the edges of the wound, pack linen between them, and bandage up till healed. In the treatment of it you should not use anything styptic or drying, for if you do the inversion will return worse than ever before. Employ relaxing substances such as fenugreek; and fomentation with water in which mallows and linseed have been boiled; and diachylon plaster which has been previously softened with one of the oils and spread on the packs; and treat it with this. The main thing in the treatment is to use every device to prevent the healing up of the place as it was before. This operation which we have described is but some correction of the inversion, not that the appearance of the place will necessarily revert to what it was.

الفصل الثالث عشر فى علاج الشتره التى تحدث فى الجفن الأعلى
 العين التى تعرض لها هذه الشتره تسمى أرنبية وتكون هذه
 الشتره إما طبيعياً وإما عرضية فالعرضية تكون من اندمال جرح أو شق
 أو كى ونحو ذلك، ووجه العمل فيها أن تشق ذلك الاندمال وأن
 5 تفرق شفثيه وتصير فيما بينهما فتيلة من كتان وتربطها حتى تبرا، ولا
 ينبغي أن تستعمل فى علاجها الأشياء التى تجفف وتقضب فإنك إن
 فعلت ذلك رجعت الشتره بأشد¹ مما كانت بل تستعمل فيها الأشياء
 التى ترخى مثل الحلبة والتنطيل بما قد طبع فيه خطمى ونزركتان
 ومرهم الدياخيرون قد ذوب مع شئ من الأدهان ولطخت به الفتل
 10 وعالجت به، وملاك علاجها أن تروم بكل حيلة أن لا تلتحم على
 الهيئة التى كانت عليها أولاً، وهذا العمل الذى ذكرنا إنما هو
 بعض إصلاح الشتره² لا أن³ ترجع هيئة المكان على حسب ما كانت
 البتة،

1. BM, cett. بأشر. 2. MV. ما. 3. A. لأن.

CHAPTER FOURTEEN. On the treatment of entropion of the lower lid.¹

This inversion in the lower lid is that which is truly called entropion; and it is either congenital or acquired. It is acquired by injury or incision or cautery or something like that. This is the method of operating for it: you take a needle through which has been passed a double thread and you run it into the flesh, making it penetrate from the left angle of the eye to the right angle so that the thread is fixed in flesh both ends. Then with the needle stretch the flesh upwards and make an incision with a broad scalpel; and if the eyelid returns to its proper shape, well and good. But if not, take a probe and put it on the site of the incision and with it turn back the lid. Then make two incisions on the inner side of the lid; the two incisions should begin from the angles of the incision already made and run together making an angle so that when they join they are like this (fig. 54). It is the Greek letter lambda. You remove that flesh in proportion as the angled² side is lower than that adjoining the lid; then bring the divided parts together with two sutures made with a woollen thread. Then treat with the relaxing medicaments and dressings we have mentioned, till healed. But if the inversion is acquired, from incision, suture, or cautery, you should make a simple incision below the eyelashes, as has been described, then

¹ Cremona adds '... which is a wrinkling or backward contraction either to right or to left'.

² Lit. 'sharp'. The passage is obscure. The reading of M, *al-hābi*, means 'drawing near' or 'creeping', or it might be read as *al-khābi*, 'lurking'. The phrase 'the sharp side' is given in Dozy (I. 256) as used when speaking of the *qāmūn* (a musical instrument of the dulcimer family), in the sense of the portion of the string nearest the bridge; this may or may not be relevant.

الفصل الرابع عشر فى علاج الشتره التى تكون فى الجفن الأسفل
 هذه الشتره التى تكون من أسفل هى التى تسمى بالحقيقة شترا
 وتكون طبيعيتة وتكون عرضيتة فالعرضيتة تكون من جرح او شق او كسى
 ونحو ذلك وطريق العمل فيها أن تأخذ إبره فيها خيط مشق وتغرزها
 5 فى اللحم وتنفذها من الماق الأيسر الى الماق الأيمن حتى تصير
 الخيط فى طرفى اللحم ثم تمد اللحم الى فوق بالإبرة وتقطعه بمبضع
 عريض، فإن رجع شكل الجفن على ما ينبغى وإلا فتأخذ مرودا وتضعه
 على موضع الشق وتقلب به الجفن وتشق شقين فى الجانب الداخلى من
 الجفن وتكون أطراف الشقين من زاويتي القطع الذى قطعت حتى تلتقى
 10 فتكون منها زاوية حتى اذا اجتمعت يصير شكلها شبيها بهذا الشكل:

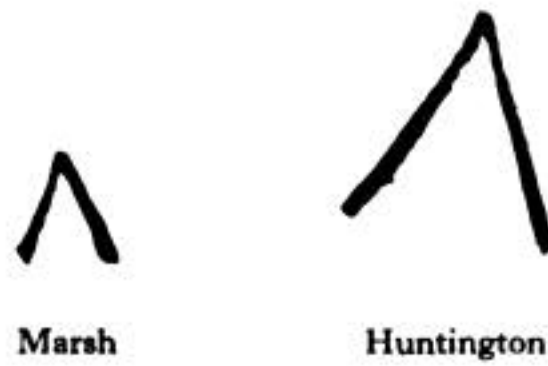


Fig. 54

Marsh

Huntington

وهو حرف اللام اليونانى، ثم تنزع ذلك اللحم بقدر ما يكون الجانب
 الحاد منه اسفل¹ مما² يلى الجفن³، ثم تجمع الأجزاء⁴ المتفرقة
 بخياطتين تخطيطه بخيط صوف ثم تعالجه بما ذكرنا من الأدوية
 المرخية والقتل حتى يبرأ، وإن كانت الشتره عرضت من شق او
 15 خياطة⁵ او كسى فينبغى أن تشق شقا بسيطا من دون شعر الأشفار

1. P. العين. 2. H. بما. 3. A. اسفل. 4. M. الحابى.

5. A. الاجر. 6. V. حراحه.

bring apart the two edges with a packing, as we have said. The sum of what there is to say about the treatment of inversion, whether it is in the upper or the lower lid, is that you should make your procedure follow the actual lines of the inversion itself; for this is of varying shape. The experienced practitioner will make use of his skill in any way he can to re-establish the natural form or approximate to it. The disease itself will generally indicate to you the appropriate operation and instruments.

أيضا على ما تقدم ثم تفرّق بين الشفتين بفتل على ما ذكرنا ، وجملة القول في علاج الشترّة اذا كانت من فوق او من أسفل أن تجسرى فيها العمل على حسب ما يتهيأ لك من هيئة الشترّة فإنّها قد تكون كثيرة الاختلاف في الصورة ، والصانع الدرب يدبّر الحيلة بأي وجه أمكه حتى يردّ الشكل على هيئته الطبيعيّة او يقاربها ، ونفس المرض يدلّك على ما يصلح له من "العمل والآلة في أكثر الأحوال" ،

7. M. الاله بالعمل الذي صلح ان شا الله

CHAPTER FIFTEEN. On adhesion of the eyelid to the conjunctiva or cornea.

This adhesion happens to many people, the upper lid sticking to the white of the eye and hindering its movement and preventing its natural functions. You should introduce the end of a probe beneath the lid and raise it upward; or stretch it with a hook. Then cut the adhesion with a fine scalpel; it should not be so sharp as a cutting scalpel, but somewhat blunt, lest during the operation the patient should shake, and the scalpel slip, and the edge injure the eye. Let your incision be as if peeling off the adhesion. Wait until the lid regains its natural shape and the adhesions be wholly healed. Then rinse the eye with saline and cleanse it; or instil into it drops of a watery solution of eye-lotion of verdigris. Then separate between the eye and the lid with a linen pad and put over the eye a piece of wool moistened with white of egg; and after the third day employ healing eye-lotions till it is better.

BOOK TWO. CHAPTER FIFTEEN

Ancyloblepharon is another disorder on the subject of which Albucasis draws all his matter from the classical writers (see Paulus, VI, 15, and Celsus, VII. 7). It is interesting to speculate what exactly Albucasis meant by 'somewhat blunt' scalpel; the original has

only the common *mibda'*. It may have been something in the nature of a guarded knife; at least it was designed to prevent any accidental damage to the eye. A similar blunt knife is spoken of and illustrated in the next chapter.

الفصل الخامس عشر فى التصاق جفن العين بالملتحم او بالقرنية
 قد يعرض هذا الالتحام لكثير من الناس بأن يلتحم الجفن الأعلى
 ببياض العين فيمنعها من سهولة الحركة ويعوقها عن أفعالها
 الطبيعية، فينبغى أن تدخل طرف مرود تحت الجفن وترفعه الى
 5 فوق او تمدّه بصنارة ثم تقطع الالتصاق بمبضع لطيف لا يكون بحدّة
 قطع المباح بل يكون كالآلة قليلاً لئلا يقلق العليل عند العمل فيفلت
 المبضع "فيؤذى العين بحدّته"، ويكون قطعك كأنك تسليح ذلك
 الالتصاق وتوقع حتى اذا رجع الجفن على هيئته الطبيعية ويبرأ
 الالتصاق كلّ فتصّب حينئذ في العين ماء مالحة تغسلها به او تقطر
 10 فيها من الشياف الزنجارى محلولاً بالماء، ثم تفرّق بين الجفن
 والعين بفتيلة كتان وتضع من فوق العين صوفة مبلولة ببياض البيض
 وبعد اليوم الثالث تستعمل الشيافات المدلمة حتى يبرأ،

M, ويرفع. 2. cett. فيؤذى الجفن بحدّته, MV بحدّته فيؤذى العين. 1.
 cett. برفق, P من فوق.

CHAPTER SIXTEEN. On incision of ungula¹ and excrescence of the canthus.

Ungula occurs in two forms: either the nervous, which resembles a fine hard membrane; or the non-nervous, like a white congealed humidity; which, when the iron touches it or you try to pick it up with a hook, is cut through and the hook has no hold on it. Both kinds grow from the greater angle of the eye, whence they spread little by little until they cover the pupil and block both the vision and the movements of the eye.

This is the method of incision: the patient places his head in your lap and opens his eyes; then you raise the lid with your hand; then with a gently curved hook pick up the ungula and pull it upward; then take a needle threaded with a horse hair or an ox hair, and a strong thread; slightly curve the end of the needle; then thrust it into the middle of the ungula, piercing it with the needle; and tie the ungula with the thread and pull upwards; and, with the hair, peel the side of the ungula adjoining the pupil, and divide it with a sawing motion right through. Then what is left in the root of the angle cut out with a fine scalpel, or with small scissors; and leave the natural caruncle in the canthus lest, in cutting it away, a chronic flux of tears occur. The ungula may be drawn out with the hook alone or with the thread as we have said, and scraped away with the smooth-tipped scalpel of this form (fig. 55). But beware lest the scalpel touch the

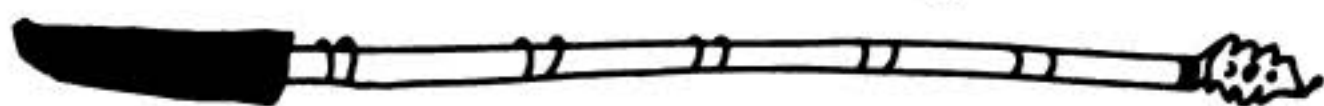
¹ i.e. pterygium.

BOOK TWO. CHAPTER SIXTEEN

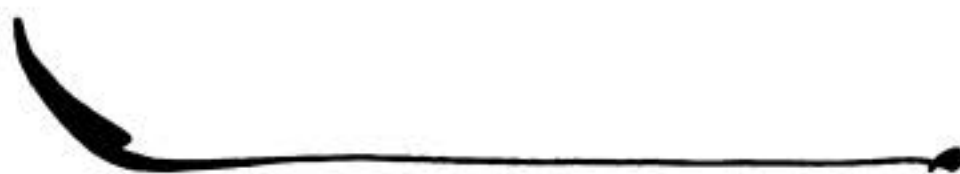
The treatment of pterygium is again derived from the classical authors. They all describe the same special knife called by Paulus and Aetius *πτερυγοτόμος* and illustrated by Albucasis (fig. 55) as a very fine sharp curved scalpel (*mibda'*); it cannot be absolutely certain that this is the actual pterygotome of the Ancients, as here it is recommended only for scraping. Fig. 56 shows a very fine

straight knife, in appearance like the modern ophthalmic knife; but the text calls it 'rather blunt' like the one in the last chapter, and says it is to be used for scraping. It may have been, as suggested above, a guarded knife; but its exact nature must remain in doubt. The author also mentions scissors, by which he must mean the ophthalmic scissors shown in chapter 11 (fig. 52).

الفصل السادس عشر فى قطع الظفرة ونتو لحم الأماق
 إن الظفرة تكون على ضربين إما أن تكون عصبية وهى تشبه
 صفاقا صلبا رقيقا وإما أن تكون غير عصبية تشبه رطوبة جامدة بيضا
 اذا مسها الحديد او رمت أخذها بالصنارة تقطعت ولم تثبت فيها
 ٥ صنارة ، وكلا الصنفين^١ إنما تبتدئ من الماق الأكبر الى أن تدب
 قليلا قليلا حتى تغطى الناظر وتمنع الضوء وحركة العين ،
 ووجه العمل فى قطعها أن يضع العليل رأسه فى حرك ثم
 يفتح عينيه وترفع الجفن بيدك ثم تلتقط الظفرة بصنارة قليلة الانثناء^٢
 وتمدّها الى فوق ثم تأخذ إبرة وتدخل فيها شعرة من شعر الخيل
 ١٥ او البقر وتُخيط قوى وتثنى طرف الإبرة قليلا وتغرزها فى وسط الظفرة
 وتتفدّها بالإبرة وتربط بالخيط الظفرة وتمدّها الى فوق وتسلخ بالشعرة
 جانب الظفرة الذى^٣ يلى الحدقة كأنك تنشرها بالشعرة الى آخرها ثم
 تقطع الباقي فى أصل الماق بمبضع لطيف او بمقص صغير وتدع لحم
 الماق الطبيعى لئلا يعرض من قطعه سيلان الدمع الدائم ، وقد تمدّ
 ٢٥ الظفرة بالصنارة وحدها او بالخيط كما قلنا ثم تسلخ بالمبضع الأملس
 الطرف الذى هذه صورته :



Marsh



Huntington

Fig. 55

1. AH. الصفتين. 2. AV, و cett. 3. codd. التى.

corneal covering and cause a fissure in it and the pupil protrude. Then after the incision put into the eye a little powdered salt or an eye-lotion of verdigris, and leave it till the following day; then treat as may be necessary till it heals.

If the ungula is non-nervous in origin and you cannot transfix it with a needle nor get a hook to hold fast in it, this sort is often successfully treated by medical means. So treat as described in the section. But if you prefer to cut it, open the patient's eye, and take a fine smooth scalpel, rather blunt, like this (fig. 56) and with this gently scrape away the ungula from above; and if you see that it is crumbling away and breaking down under the scraping, then immediately instil into the eye some eye-lotion of verdigris, or the red eye-lotion, or a little powdered salt, and bind the eye up till next day. Then repeat the operation on it till you have removed it all, unless an abscess forms in the eye, in which case cease the operation and treat the abscess till cured. Then repeat the treatment with the same scraping till healed.

As for a protuberance of flesh in the angle, if it causes great hurt pick it up with a hook and cut part of it away, with not too big an incision lest there be a flux of tears. Then into the canthus instil red eye-lotion or lotion of verdigris till healed.

وتحفظ من أن يمس الموضع بالغشاء القرنى فيحدث فيه فتقا
فتنتو الحدقة، ثم بعد القطع تلقى فى العين شيئا من ملح
مسحوق او من الشياف الزنجارى وتركها الى يوم آخر ثم تعالجها
20 بما ينبغى الى أن تبرا،

فإن كانت الظفرة غير عصبية ولم تستطع أن تدخل فيها إبرة ولا
تثبت فيها صنارة فكثيرا ما تعالج هذا النوع من الظفرة بالأدوية فتبرا
كما وصفت فى التقسيم، وإن أردت قطعها فافتح عين العليل وخذ
مبضعا لطيفا أملس ضعيف الحد⁴ على هذه الصورة:



Fig. 56

Marsh



Huntington

واجرد الظفرة به من فوق جرذا بلطف فإن رأيت أنها تتخلخل
25 وتتفتت وأثر فيها الجرد فقطر من ساعتك فى العين من الشياف
الزنجارى او الشياف الأحمر او ملحا مسحوقا وشد العين الى يوم
آخر ثم أعد عليها العمل حتى تذهب جميعها إلا إن اعترضك فى
العين ورم حار فاتركها وعالج الورم الحار حتى يبرا ثم أعد العمل
30 عليها بالجرد حتى تبرا،

وأما نتو لحم الماق فإنه إن كان النتو يؤذى العين أذى فاحشا
فعلق ذلك النتو بالصنارة واقطع منه بعضه ولا تمن فى القطع لكلا
يحدث سيلان الدمع ثم قطر فى الآماق الشياف الأحمر او الزنجارى
حتى يبرا،

V. الحد. 4.

CHAPTER SEVENTEEN. On cutting for chemosis and superfluous flesh in the eye.

Sometimes in the eye of certain people a red granulation grows up and increases so as to block the pupil or nearly so; or it grows over the eyelids and often turns the lids outward, and it resembles the blossom of the pomegranate.¹ You operate for this by having the patient put his head in your lap; then he opens his eyes and you gather up the granulation whole, with suitable hooks, or hold it with tweezers or forceps. Then you cut away the first bit of flesh and then the next, until you have cut it all away; and beware of damaging the eye in the course of operation. Your incision should be made with the scalpel which we described for the incision of pterygium; or with small scissors like those with which one gathers up pannus, as shown in the chapter after this. And when you have finished your incision and removed all the chemosis, fill the eye with powdered salt or instil the red powder or similar corrosive; and apply to the outside of the eye cotton wool with white of egg to ward off an abscess. If there is any chemosis left and blood is getting the better of you and you fear an abscess, then desist and treat the eye with those means for settling a tumour. Thereafter return to your operation till cured.

So must you do with superfluous flesh that arises in the eye. But you must avoid treating surgically any eye that is weak, whether congenitally or by acquired disease. Never set your hand to an operation of this kind till you have seen if the organ can endure such an operation.

¹ M adds in the margin: 'This occurs most often in babies.'

BOOK TWO. CHAPTER SEVENTEEN

The instruments used for the treatment of chemosis are similar to either the ones described already for pterygium or those he gives later for pannus (chapter 18).

الفصل السابع عشر في قطع الوردينج وما ينبت من اللحم الزائد في
العين

قد ينبت في عين بعض الناس لحم أحمر متراكب حتى يغطى
الناظر أو يقارب أو يفيض على الأجفان وربما انقلبت الأجفان الى خارج
5 ويشبه ورد الجلنار،¹ والعمل فيه أن يضع العليل رأسه في حبرك
ثم يفتح عينيه وتلقط ذلك اللحم الأحمر كله بالصنانير الموافقة لذلك
أو تمسكه بمنقاش أو جفت ثم تقطع اللحم الأول فالأول حتى تفنى
جميعه بالقطع وتحفظ من العين لئلا تؤذيها عند العمل، ويكون
قطعك له إما بالمبضع الذي وصفنا في قطع الظفرة أو بمقص صغيرة²
10 كالتى³ تلتقط بها السبل⁴ على ما تأتي صورتها⁵ في الباب الذي يلي⁶
هذا الباب، فإذا تم قطعك وذهب جميع الوردينج فاملا العين من
الملح المدقوق أو قطر فيها ذرورا أحمر ونحوه من الأدوية الأكالة
واحمل على العين من خارج قطنة ببياض البيض لتأمن الورم الحار
فلن بقى من الوردينج شيء وطلبك الدم وخشيت الورم الحار فاترك
15 العين وعالجها بما يسكن الورم ثم عد عليها بالعمل حتى تبرأ وكذلك
فاصنع باللحم الزائد الذي يعرض في العين من هذا النوع إلا أنه
ينبغي لك أن تجتنب علاج كل عين ضعيفة من طريق الطبع أو من
طريق العرض بالعمل بالحديد ولا تدخل يدك في شيء من هذه
الأعمال حتى ترى أن ذلك العضو محتمل لذلك العمل،

بالمقص، MS. 2. M¹ in marg. <أكثر ما يحدث للأطفال الصغار> 1.
B, كالذى 4. A. كمقص السبل 3. cett. بمقص صغير، H الصغير
cett. بعد، P. 6. B. به 5. HMSP. التى، V الذى

CHAPTER EIGHTEEN. On gathering up pannus from the eye.

Pannus is a network of blood-vessels spreading over the eye so as to interfere with the function of sight and, in the course of time, weakening the eye. You must first examine, and if the eye with the pannus be strong, with no fault other than the pannus, then the pannus should be gathered up. This is done by bidding the patient put his head in your lap; then, as skilfully as you may, pick up those blood-vessels with one or two hooks. The hooks should be of a gentle curve, like this (fig. 57). Or there can be two hooks joined together on one handle, thus (fig. 58). Then take up the blood-vessels gently with the fine scissors, and wipe away the blood constantly, till you see all those blood-vessels removed from the eye, and the blood wells forth. But be careful of the eye lest you damage it with the points of the scissors. Let your work be done in broad sunlight at midday; and be very steady in your action so as to cut nothing beside the blood-vessels. When you have finished, instil the red or green lotion into the eye

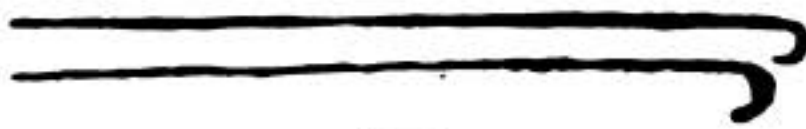
BOOK TWO. CHAPTER EIGHTEEN

This chapter seems independent of the Ancients. The condition described here as pannus was presumably the result of trachoma. Albucasis advises the removal of the pannus and illustrates some instruments for the purpose. First, hooks to pick up the pannus. These must be a kind of conjunctival hook; they are fine, pointed, and narrow; he shows a special double one on a long handle

which is surely a new kind of instrument. The scissors shown (fig. 59) are almost exactly like those for operating on the relaxed lid—presumably entropion—in chapter 11 (fig. 52). The slight difference may, however, be of some importance, as the figure in the Huntington MS. suggests they may have been curved.

الفصل الثامن عشر فى لقط السبل من العين

السبل عروق حمر تنتسج على العين فيمنع البصر فعله وتضعف العين مع طول الأيام فينبغى لك أولا أن تنظر فلن كانت العين التى فيها السبل قوية ولم يكن فيها مرض آخر غير السبل فحينئذ فاللقط¹ وهو أن تأمر العليل أن يضع رأسه فى حجرى ثم علق تلك العروق بصنارة واحدة او باثنتين على حسب حذقك وتكون الصنابير لطيفة الانشاء على هذه الصورة:



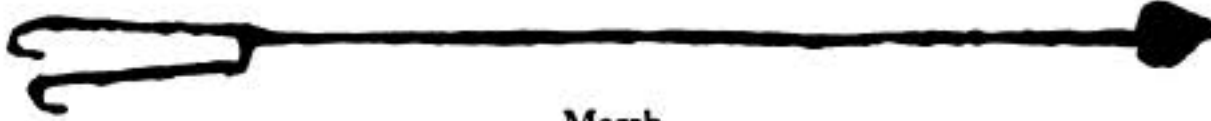
Marsh



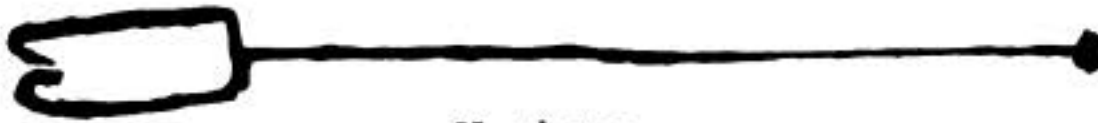
Huntington

Fig. 57

او تكون صنارتين مزدوجتين فى جسم واحد على هذه الصورة:



Marsh



Huntington

Fig. 58

ثم تلتقط بمقصر لطيفة تلك العروق بلطف وتمسح الدم حيناً بعد حين حتى ترى العين قد ذهبت منها تلك العروق² وانحلب الدم² وتحفظ من العين لا تؤذيها بأطراف المقصر وليكن عمك نصف النهار بإزاء الشمس وتثبت فى عمك جداً لئلا تقطع غير تلك العروق فعند

1. M, cett. فالقط سبلها, A, فالقطه, M. 2. HS, واحباب الدم, P, واملت بالدم, A, واملت بالدم, BV, واخلت بالدم.

to destroy by its caustic action the remnants of the pannus. If you are unable to gather it all up at that one time, apply a plaster to the eye such as will allay the pain, and leave him* for a few days till* the pain be eased and there is no danger of an abscess. Then repeat the operation in the same manner till it is healed. This is a figure of the scissors (fig. 59).

[The principle in the operation is that the eye be opened with double or triple openers held by a skilful pupil, the patient's head being in that pupil's lap, while another wipes away the tears and carefully watches the internal and external angles of the eye. You have the choice between beginning the removal from the top or from the bottom of the eye. The best method is to fix two hooks in the upper side, one at the end of the iris and the other at the beginning of it. Hold them between your middle and first fingers. Then attach hooks below the points of the first two, and hold them between your third and fourth fingers. Raise your hand slightly until you see that the whole pannus has been lifted. Then cut from the lesser angle, with scissors or a fine scalpel, as you wish. Introduce the scraping-needle

فراغك فقطر في العين الشياف الأخضر او الأحمر ليأكل بحدته ما
 بقى من السبل، فإن لم يمكنك لقطه كله في تلك الساعة فضم
 العين بما يسكن³ ألم العين واتركه أياماً حتى يسكن ألمها وتأمين الورم
 الحار ثم أعد عليها العمل على هذه الصفة بعينها³ حتى تبرأ وهذه
 صورة المقص:

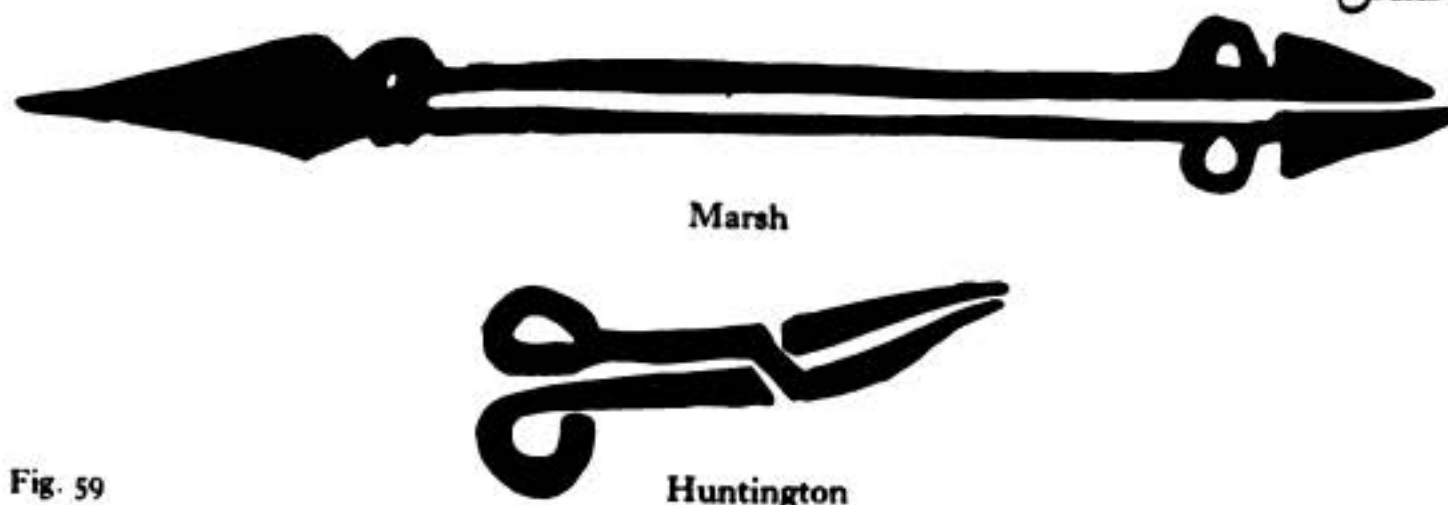


Fig. 59

3. الالام

عنها واتركه [ويكون رأس العليل في حجر التلميذ وآخر ينشف الدمع
 ويحقق النظر في مدم العين وموخره وانت] الاصل في العمل ان
 فتح العين بفتاحات مثبته او مثلته يمسكها تلميذ حادق ويكون رأس
 العليل في حجر التلميذ وآخر ينشف الدمع ويحقق النظر في مدم
 العين وموخره وانت بالخيار ان تبدا باللقط من اعلى العين او من
 اسفلها والاولى ان تتشف صنارتين في الحانب الاعلى يكون واحده
 في اخر الاكليل والاخرى في اوله وتمسكها بين الوسطا والسبابه ثم
 تعلق صنابير من تحت قبالهما ثم تمسكها بين الخنصر والبنصر
 وشيل بك شيلاً خفيفاً حتى تري السبل كله قد ارتفع ثم تقطع من
 الغرب الاصغر ان شيت بالمقص وان شيت بمبضع لطيف وتدحل

and cut away the entire pannus until it is lifted over the conjunctiva. Do not interrupt the wiping, for tears and blood will flow and hinder you. Then cut with scissors what is left over the iris, from above and below, until nothing remains adhering except over the cornea. If you can remove it from over the cornea, peel with the scraping-needle, for it is better, and in some cases is easily done. When you cut it, its . . . will come out for some days].¹

¹ This paragraph, in which certain obvious errors in the Arabic have been corrected, appears in M in place of the words between asterisks towards the end of the preceding paragraph. It is marked as an interpolation by its vocabulary, which differs in some respects from that usually employed by our author.

المهت على ابره وتستبرى السبل كله حتي يرتفع على الملحم ولا تقطع
التنشف فان الدمع والدم صعب (تميع؟) عليك ثم اقطع بالمقص ما زاد
على الاكليل من فوق ومن اسفل حتى لا يبقى ناشب الا في القرنيه
فان امكنك ان ترفعه من على القرنيه سلخ بالمهت فهو احسن وقد
يتها في بعض الناس واذا قطعتة كان حرج محلعه اما يسكن
M. وجعها وامن الورم الحار ثم اعد العمل عليه

CHAPTER NINETEEN. On turning a fistula into the nose.

Doctors give the name 'fistula' to what laymen call 'a quill'.¹ When you have treated it with the cautery or with caustic according to the instructions given previously, and it is not healed, there is no clear method of treatment except to cut down on the tumour at its ripening and let out all the humidity or pus therein, till you reach the bone. When bone is reached and you see necrosis or blackness, scrape it with an instrument like this (fig. 60). It is called 'rough-head' and is made of Indian iron. Its head is round like a button² but is engraved with markings finely engraved, like those of a file or a rasp. Place it on the site of the diseased bone and spin it between your fingers, pressing down a little with your hand, till you are sure all the diseased bone has been scraped away. Do this several times. Then let the place be dressed with stanching and styptic remedies. And if the place heals and flesh is generated there and the flow of sanies is stayed and there is no return after leaving for forty days, and there is no swelling, and nothing emerges, you may know it is perfectly healed. But if not, there is no other means for it but to turn the fistula into the cavity of the nose, in this style, namely, that you lay bare the bone a second time, either by an

¹ Lit. 'Doctors call the quill (*rīsha*) "fistula" (*ndīfūr*)'.

² AM read 'like a dirham' (a coin).

BOOK TWO. CHAPTER NINETEEN

Lachrymal fistula, called *aegilops* by the Ancients, was discussed by Celsus (VII. 7), Archigenes (quoted by Galen), Aetius (VII. 77), and Paulus (VI. 22) and most of the other less well-known writers. On the whole, cauterization was the most favoured procedure. Albucasis differs from them in this respect. He begins with cauterization and gives in Book I, chapter 17, details of certain instruments. Most of the Ancients left the matter there. In this chapter Albucasis goes further to describe procedure and instruments that seem to be original for such a case as had not answered to cauterization. The first instrument, with a name in Arabic meaning rough-head, may be considered to be a raspatory (fig. 66). It has a globular head

roughened by engraving with file-marks. When the bone at the bottom of the fistula, on exposure, was found to be diseased, this little instrument was pushed down upon it and rotated until the diseased bone was filed away. But if the fistula continued discharging pus, a treatment is advised similar to that of Archigenes namely drilling right through into the nose with a drill (*mish'ab*) having a triangular iron head, sharp-pointed, as the drilling head, and a wooden handle to twirl between the operator's hands. This is shown well in both MSS. (fig. 67). The idea of the drill is, of course, very old, being of the same order as the *τρύπανον* of Hippocrates; the subject is annotated later (II. 40 and III. 2).

الفصل التاسع عشر في ردّ الريشة الى الأنف

تسمى الأطباء الريشة ناصورا، اذا عالجتها بالكوي او بالدواء الحاد المحرق على ما تقدم وصفه ولم تبرأ فليس الحيلة فيها إلا أن تشق على الورم عند نضجه وتستخرج جميع الرطوبة التي فيه او القيع حتى ينكشف العظم فإذا انكشف العظم ورأيت فيه فسادا او سوادا فاجرده بآلة هذه صورتها :

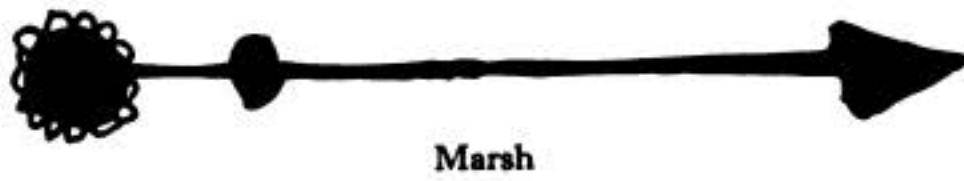


Fig. 60



وتسمى الخشنة الرأس تصنع من الحديد الهندي ويكون رأسها مدورا كالزرة¹ قد نقشت نقش المبرد او الإسكفاج² نقشا رقيقا فتضعها على موضع الفساد من العظم ثم تديرها بين أصبعيك وأنت تنم يدك قليلا حتى تعلم أن ذلك الفساد قد انجرد وتعمل ذلك مرأت ثم تجبر الموضع بالأدوية المجففة القابضة فإن انختم³ الموضع ونبت فيه اللحم وانقطع جرى المدة وقى أربعين يوما ولم يتجدد عليه ولم يرم ولم يحدث فيه حادث فاعلم أنه قد برئ، وإلا فليس فيه حيلة إلا ردّ الناصور الى ثقب الأنف على هذه الصفة وهي أن تكشف عن

1. AM, كالد B. 2. H, الاسكفاج. 3. ABM, التحم.

instrument or by caustic; and when the bone is uncovered, then take a drill like this (fig. 61). Its extremity, which is of iron, should be triangular; and its wooden handle should be conical in shape, and, as you see, tapering to the extremity. Then put it to the bone itself near the canthus; but keep your hand a little away from the eye; then with your hand rotate the drill till the bone is perforated; and the patient will have the sensation of this, since, if he holds his hands over his nose he will find the breath coming out through the hole. And then dress the place with styptic and stanching remedies as I have taught you. And when the flesh begins to grow and the place gets hard, the matter which before was coming outward will be turned into the nose; and this will be easier for the patient.

١٥ العظم ثانية بالحديد او بالدواء الحادث فإذا انكشف العظم فخذ
مشعباً على هذه الصورة:



Marsh



Huntington

Fig. 61

يكون طرف الحديد مثلاً وعودها مخروطاً مجلوها الى الطرف كما
ترى ثم ضعه على العظم نفسه ويكون ذلك قرب الماق وأبعد يدك من
العين قليلاً ثم أدر يدك بالمشعب حتى ينفذ العظم ويحس به
العليل بأن يجد الريح تخرج منه اذا أمسك يده على أنفه فحينئذ
٢٠ أجبر الموضع بالأدوية القابضة الجففة كما أعلمتك فإذا نبت اللحم
وصلب المكان فإن المادة التي كانت تنصب الى خارج ترجع الى الأنف
فيكون ذلك أخف على العليل إن شاء الله،

H. مقباً 4.

CHAPTER TWENTY. On the reduction of exophthalmos.

When the whole eye is prominent and there is no reduction or impairment of vision, you should get the patient's bowels open. Then venesect him in the cephalic vein; then apply cupping vessels to his neck without scarification and draw off by gentle suction; then put to the eye a poultice made of acacia and aloes and olibanum and sarcocolla; then bandage the eye over the application with many pads. The way to make pads is to take a number of soft rags and fold each into four thicknesses. Prepare a good many. Then put them one on top of the other as the eye requires; then bind on stiff bandages over these, tying them firmly. Repeat the cupping with suction and without scarification. Then take away the cupping vessel and leave the eye bandaged a day and a night. If the bandaging slackens during that time, it must be tied properly. Then remove the bandaging after a day and a night, as we have said. If you see that the eye has receded, good. Otherwise repeat the applications and pads and bandages and the cupping till it does recede.

الفصل العشرون فى ردّ نتو العين

إذا نتت العين بجملتها ولم تحدث فى البصر آفة ولا نقصان
فينبغى أن تسهل العليل ثم تفصده فى القيال ثم تضع محجمة فى
القفا من غير شرط وتمصّ مصاً رقيقاً ثم تضع على العين لطوخاً صنع من
5 أقاقيا وصبر ولبان² وعنزروت ثم تشدّ العين من فوق على الضماد برقائق
كثيرة ، وصفة الرقائق أن تأخذ حرقاً لينة كثيرة فتشوى³ كلّ خرقعة منها
على أربع طبّات تصنع منها كثيرة ثم تضعها واحدة على أخرى على قدر
ما تحتاج إليه العين ثم تشدّ عليها بخرقعة صلبة شداً قوياً وتعيد
المحجمة بالمص من غير شرط ثم تنزع المحجمة وتترك العين مشدودة
10 يوماً وليلة ،⁴ فإن استرخى الرباط⁵ فى خلال ذلك فينبغى أن يشدّ
نعماً ثم انزع الرباط⁶ بعد يوم وليلة⁷ كما قلنا فإن رأيت العين قد
رجعت وإلا فأعد الضماد والرقائق والشدّ والمحجمة حتى ترجع ،

H, طبقات 4. M, طوى H, فلقى 3. ABV, ولوان 2. M, لصوقا 1.
M, طامات 5. om. HM. 6. om. A.

CHAPTER TWENTY-ONE. On cutting for staphyloma.

When a rupture befalls the uveal membrane so that it swells and protrudes outside the eyelids looking like a grape, and on this account the man's features are disfigured; if you intend to cut it away the operation will be as I am about to describe. You introduce a needle to the root of the uvea from the lower to the upper segment; then you introduce another needle threaded with a double thread, from the region of the canthus major where you will perforate it; and leave the first needle in its place. Then cut the place of doubling of the doubled thread,¹ and with it ligature that part of the excrescence around the needle and tie it well. Then remove the needle and apply to the eye wool moistened with egg-white; and leave till the thread falls away with the growth. Then treat the eye with fortifying dressings till the wound be healed. Sometimes the uvea is tied all round with a circle of material so that the prominence of the eye is greatly increased. Then you perforate it with a fine scalpel going to the depth of the eye; and an albuminous humour will flow out and the eye will shrink and return at once. Then bandage till healed.

¹ This means cutting the thread at the eye of the needle, leaving two ends to be used for ligaturing.

BOOK TWO. CHAPTERS TWENTY-ONE
AND TWENTY-TWO

Paulus (vi. 19 and 20) is the immediate source for Albucasis' sections on staphyloma and hypopyon. A fine scalpel (*mibda'*) is mentioned but not further described.

الفصل الحادى والعشرون فى قطع العنبيه

اذا عرض فتق فى الطبقة العنبيه ثم نتت وبرزت خارج الأجفان كهيئة العنبة وقبحت صورة الإنسان لذلك وأردت قطعها فالعمل فيها على ما أصف وهو أن تدخل إبرة فى أصل العنبة من أسفل الى فوق⁵ ثم تدخل إبرة أخرى فيها خيط مشق من ناحية الماق وتنفذها وتدع الإبرة الأولى على حالها ثم تقطع موضع انثناء² الخيط المشق وتربط به بعض العنبة حول الإبرة وتشدها نعمًا ثم تخرج الإبرة وتضع على العين صوفًا مبلولًا ببياض البيض وتدعها حتى تسقط الخيوط مع العنبة ثم تعالج العين بما يقويها حتى يبرأ الجرح ، وقد تشد العنبة من كل¹⁰ جهة بدائرة من خرقة حتى تزداد العين نتوا نعمًا ثم تبطن بموضع رقيق يصل الى غور العين فتسيل الرطوبة البيضية وتنزل العين وتذبل³ على المقام ثم تشدها حتى تبرأ ،

1. AM. كحبة. 2. H s. p. , om. cett. 3. MV, cett. وتدخل.

CHAPTER TWENTY-TWO. On the treatment of hypopyon.

This disease which is called 'hypopyon' is a collection of pus in the eye which resembles cataract but is not so. The method of operating in this disease is to make the patient sit upright on a chair before you. Take his head on either side with your hands and shake it about till you can see the pus come down; then it will be fixed and not move; and the light will pass and the patient will see things as he was before. But if it does not come down, we know it is cataract. But if the pus is not ready to be brought down by this method, then seat the patient in front of you; then take a fine scalpel and cut a little above the corneal tunic near the coronal junction of conjunctiva and cornea, till the pus comes out. When it comes out, instil warm water mixed with honey, or water boiled with fenugreek and honey. Then treat as usual till healed.

الفصل الثانى والعشرون فى علاج الكفة

هذه العلة التى تسمى الكفة إنما هى مدة تجتمع فى العين
تشبه الماء النازل وليس به ، ووجه العمل فى ذلك أن تقعد العليل
على كرسى منتصبا ثم تأخذ رأسه بيدك من الجهتين وتحركه حتى ترى
5 المدة تصير الى أسفل بعينك ثم تثبت ولا تزول وينطلق النور ويرى
العليل الأشياء كما كان يراها ، وإن لم تنزل الى أسفل علمنا أنه
الماء ، فإن لم يتهيا نزول المدة بما ذكرنا وإلا فأجلس العليل بين
يديك ثم خذ مبضعا رقيقا وشق به فوق الغشاء القرنى قليلا عند
اتصال الملتحم بالغشاء القرنى فى الإكليل حتى تخرج المادة فإذا
10 خرجت فقطر فى العين ماء حاراً قد مزجت فيه عسلا او ماء قد أغليت
فيه حلبة وعسلا ثم تعالج بسائر العلاج حتى يبرأ ،

[deest haec sectio in codice A]

CHAPTER TWENTY-THREE. On the couching of cataract.

We have already mentioned in the appropriate section the varieties of cataract and those in which depression is useful, in full detail; so you may take it accurately from there.

You should cause the patient to sit down cross-legged before you, facing the light in full sun, and firmly bind up his sound eye. Then lift up his eyelid with your left hand, if it be the left eye in which the humour is; or with the right hand if it be the right eye. Then take the couching needle in your right hand if it be the left eye; or in your left hand if it be the right eye. Then put the tip of the needle near the corona, about the thickness of a probe away, onto the white of the eye itself, on the side of the lesser canthus. Then thrust the needle firmly in, at the same time rotating it with your hand, until it penetrates the white of the eye, and you feel that the needle has reached something empty. The depth the needle goes in should measure as the distance from the pupil to the edge of the iris, which is the corona of the eye; you will see the metal in the pupil itself because of the transparency of the corneal tunic. Then put the needle up to the place containing the humour; then press the point downwards time after time. If the humour comes down at once, the patient will at once see whatever his vision is opened upon while the needle is still in his eye. Then let him rest a little while; and if the humour goes back up again depress it a second time without taking the needle out. When it stays down firmly and does not come back again, gently draw the needle out, twisting it ever so slowly with your hand. Then dissolve a little pure rock-salt¹ in water and wash the eyeball with the solution; then apply all over the outer aspect of the eye carded linen or wool moistened with oil of roses and egg-white, and

¹ *andarānī*. See H. E. Stapleton, R. F. Azo and M. Hidāyat Husain, 'Chemistry in 'Irāq and Persia in the Tenth Century A.D.', *Memoirs of the Asiatic Society of Bengal*, vol. viii, no. 6, p. 346.

BOOK TWO. CHAPTER TWENTY-THREE

The substance of this important chapter on cataract comes primarily from Celsus (VII. 7) whose directions are copied in detail by Galen, Aetius (VII. 53), and Paulus (VI. 21), the last being most likely the immediate source. Another writer of even greater authority on the subject was Antyllus (third century A.D.), whose works are lost. But he was unknown to Albucasis. In this chapter

Albucasis mentions three instruments of high interest. The first is termed *miqdaḥ*, which means both 'couching-needle' and 'ladle'. This, coupled with the several illustrations from both MSS. (fig. 63), indicates a broad spatula-ended needle as the couching-needle. This presumably would correspond with what Celsus describes in these words: *Tum acus admovenda*

الفصل الثالث والعشرون في قدح الماء النازل في العين
 قد ذكرنا أنواع الماء في التقسيم وأيّها يصلح للقدح² بكلام مشروح
 مفسر فتأخذه من هناك على الصحة،
 فحينئذ ينبغي أن تجلس العليل بين يديك مترعاً قبالة الضوء
 5 قرب الشمس وتربط عينه الصحيحة وتشدها شداً جيداً، ثم ترفع جفن
 عينه بيدك اليسرى إن كانت العين التي فيها الماء العين اليسرى أو
 بيدك اليمنى إن كانت العين اليمنى، ثم تضع طرف المقدح قرب
 الأكليل بغلظ مرود في نفس بياض العين من جهة الماق الأصغر ثم
 تدفع المقدح بقوة وأنت تديره بيدك حتى ينفذ في بياض العين
 10 وتحس بالمقدح أنه قد وصل إلى شيء فارغ وينبغي أن تصير قدر
 زهاب المقدح إلى العمق قدر البعد الذي يكون من الصبي³ إلى
 آخر السواد وهو إكليل العين فإن النحاس تراه في نفس الناظر رأى
 العين لصفاء الغشاء القرني، ثم تصير المقدح إلى فوق إلى الموضع
 الذي فيه الماء ثم تكبسه إلى أسفل مرة بعد مرة فإن نزل الماء من
 15 ساعته فإن العليل يرى ما فتح عليه بصره من ساعته والمقدح في عينه
 ثم يسكن قليلاً فإن صعد الماء فأنزله ثانية من غير أن تخرج المقدح
 فإذا استقر ولم يصعد فأخرج المقدح برفق وأنت تفتل به يدك
 قليلاً قليلاً ثم تدوب في الماء شيئاً من ملح صاف أندرانى⁴ وتغسل به
 العين من داخل ثم تضع من خارج العين كلها مشاقة أو صوفاً مبلولاً

1. B. 2. M. القدح. 3. V. وآيما، P. ومتى، M. وانها، H. وانما، A. وآيها، B.
 4. om. MPV, add. V¹. 5. B. درابى.

bandage it up together with the sound eye. Now we and our contemporaries apply pounded cumin with the egg-white.

But if the couching needle does not serve, failing to enter the eye on account of its hardness (for there are some whose eyes are hard indeed), you should take the scalpel called *al-barid*¹ figured thus (fig. 62). With this make a perforation in the conjunctiva only, not piercing any further; for that is only to make a little entrance for the needle. And then thrust in the needle as we said before.

At the end of your operation, prepare a solidly-built bed on which the patient may lie on his back, in a dark room; and keep him from all movement or coughing. And prescribe such a diet for him as will relax his system; neither let him move his head to right or to left. Let the bandage remain in the same position till the third day. Then loosen it in the same dark room and make trial of his sight, putting before him objects to be seen; then replace the bandage till the seventh day. You should not do this at the time of treatment nor immediately after the perforation by the needle; but on the contrary you should avoid it, for intensive use of the eye causes a rapid ascent of the humour. But if an abscess occur you should unbandage the eye before the seventh day and restore it to health by those methods that allay swelling. When it has subsided, allow him free sight, putting over his face a dark veil beneath which his vision may be exercised for a few days while he is still in the dark room. Then let him come out

¹ This word is used for a type of probe in II. 46.

est, sic acuta, ut foret, non nimium tenuis; from which, and the following paragraph, it may seem that to the Roman surgeon the exact shape of the needle was of less consequence than the manner of using it. But the Arabs had apparently developed a particular type of needle for the couching of cataract.

If difficulty is encountered in entering the needle or spatula to depress the cataract, a perforation is to be made with a fine scalpel named *al-barid*. The Marsh figure shows a straight slender scalpel; the Huntington drawing is of a still slenderer blade, curved, on a very long handle. Drawings of the same instrument with the same name, are given in

chapter 46; there it is noted as being rather of the nature of a sharp probe. Celsus directs that if depression fail, the point of the needle should be used to cut up the cataract in pieces. This procedure is not mentioned by Albucasis, and would hardly be possible with the instrument described here.

The alternative meaning of the word *miqdah* might suggest some connexion with the 'spoon-probe' of the Ancients; but against this is the fact that the classical *specillum auricularium* or *μηλωτρὶς* was never used, so far as we know, for ophthalmic work like this; nor, from the known examples, can such a use be conceived.

After describing this, generally accepted,

20 بدهن ورد وبياض بيض وتربط معها العين الصحيحة، وأما نحن وأهل
 زماننا فنضع عليها الكمون المدقوق مع بياض البيض،
 فإن لم يجبك المقدح للدخول في العين لصلابتها لأن من الناس
 من تكون عينه صلبة جدًا فينبغي أن تأخذ الموضع الذي يسمى البريد
 الذي هذه صورته:



Marsh

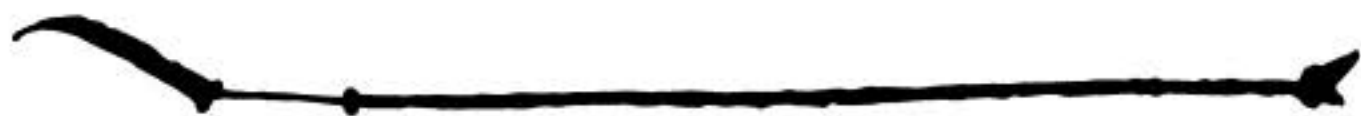


Fig. 62

Huntington

25 فتثقب به نفس الملتحم فقط ولا تمنع في الثقب وإنما هو أن
 تطرق للمقدح موضعا لطيفا ثم تدخل المقدح على ما ذكرنا،
 وعند كمال عملك تهتئ للعليل مضطجعا محكما ينام فيه على ظهره
 في بيت مظلم ويمتنع من جميع الحركات ومن السعال وتجعل طعامه ما
 تلين به طبيعته ولا يحرك رأسه يمينا ولا شمالا البتة ويكون الرباط
 30 على حاله الى اليوم الثالث ثم تحله في ذلك البيت المظلم وتجرب
 بصره وترى أشياء ثم ترد الرباط الى اليوم السابع ولا ينبغي أن تفعل
 ذلك في وقت العلاج او بعد القدح من ساعتك بل ينبغي أن
 تجتنب ذلك من قبل أن الماء يصعد سريعا بالنظر الشديد، فإن
 عرض ورم حار فينبغي أن تحل العين قبل السابع وتصلح ذلك بما
 35 يسكن الورم حتى اذا سكن فحينئذ تطلق بصره وتضع على وجهه خمارا
 يدرب بصره من تحته آياما وهو في ذلك البيت المظلم ثم يخرج عن

of the room gradually and take up the exercise of his business. But you should know that in the case of a depression of a cataract the student cannot manage without having seen that operation performed several times; then he may perform it himself. I have heard that a certain Iraqi has said that in Iraq he makes a hollow needle by which the humour is sucked out. In our land I have never seen anyone do it in this fashion, nor have I read of it described in any of the books of the Ancients; perhaps it is newly invented.

Here are the figures of some kinds of needle for the information of those who do not know them (fig. 63—five figures in all). They are mostly made of brass; and their extremities should be of this very fineness, triangular at the tip and sharp.

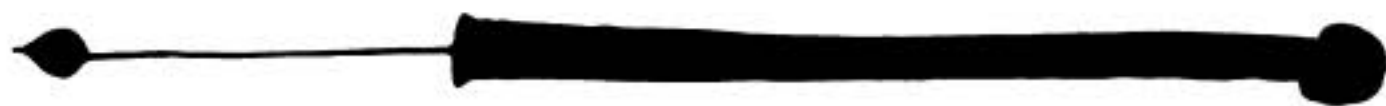
mode of dealing with cataract, with the couching-needle, Albucasis goes on to speak of a method practised in Mesopotamia. The hollow needle he mentions must have been like a tiny trocar or aspirating needle. The Englishman Woolhouse (1666–1744) invented one, which he called a *paracentharium oculi*, and which was described in the *Paris Journal des Scavans* XII. 11 (1696) thus: *Il a pareillement inventé un instrument fort curieux pour sa nouvelle opération de l'hydropisie de l'œil*. It seems likely that what Albucasis heard of was indeed an instrument of this order for trephining the eye and evacuating some of the fluid in a case of glaucoma; which might not be recognized as a separate disease from cataract. It is of interest to note that Rhazes, the Meso-

potamian writer born about A.D. 850, quoting from a now lost work of Antyllus (third century A.D.), describes a form of suction for the relief of blindness; and this may be the direct or indirect source whence Albucasis got his information. The same author in the same quotation also mentions tearing open the capsule if the cataract cannot be depressed. Avicenna described three kinds of cataract needles: (1) *miqdaḥ*—the same word as for the same instrument in this chapter, a needle with a triangular arrow-shaped point; (2) *miḥaṭṭ*—a round-bodied needle such as that described by the Greeks; (3) *iqḷid* (actually an Arabic transcription of the Greek κλειδίον—key)—a blunt needle more of the nature of a probe, probably to raise the cataract from its bed.

البيت بتدرّج ويتصرّف في أسبابه ، واعلم أنّ القدح لا يستغنى فيه
 المتعلّم عن المشاهدة مرّات فحينئذ يقدم على العمل ، وقد بلغنى
 عن بعض العراقيين أنّه ذكر أنّه يصنع بالعراق قدحا منفوذا يمتص به
 ٤٥ الماء ولم أر أحدا في بلدنا صنع ذلك ولا قرأته في كتاب من كتب
 الأوائل وقد يمكن أن يكون ذلك محدثا ،
 وهذه صورة أنواع من المقادح ليقف عليها من جهلها :



Marsh



Marsh



Huntington



Huntington



Fig. 63

Huntington

تصنع من النحاس خاصّة ويكون طرفها بهذه الرقّة بعينها مثلثة
 الطرف حادة ،

6. P. نحاس ، M. نحاس اصفر .

CHAPTER TWENTY-FOUR. On the treatment of nasal polyp.

Sometimes there arise in the nose various superfluous fleshy growths. One of these is a thing resembling a centipede; another, a cancerous growth, stony, hard, and pale in colour; another again is a soft growth, not pale. Any of these growths that is soft is not malignant or cancerous.

You should make the patient sit before you, facing the sun, and dilate his nose and introduce a hook into these polyps and draw them out; then amputate what you can take hold of, with a fine scalpel sharp on one side, till you know that all the growth is gone. And if there be anything of them left behind that you cannot cut away, then gently scrape away with any fine instrument till nothing of them remains; and if the bleeding be too much for you, or an abscess occur, then combat it by suitable means. If it be a malignant swelling, then speedily cauterize till the bleeding stops and all the polypi are gone. Then introduce into the nose, after the incision, vinegar and water, or wine; and if the nose be free and fluid flow into the throat from it, then know that he is cured. But if fluid does not pass through it as it should, you may know that there is a polyp within in the upper part of the ethmoid bone where the instrument could not reach to make incision. In this case you must take a linen thread, rather thick, and tie many knots in it with a space of a finger's breadth or less between each pair of knots; and let the patient try to get one end of the thread into his nose with a probe or anything he can, after making it into the form of a button;¹ and let him make a full inspiration till it reaches the cartilage and comes out through

¹ By winding the thread round the tip of the probe.

BOOK TWO. CHAPTER TWENTY-FOUR

This chapter on nasal polypi is a proof that Albucasis was no mere copyist of the ancient authors. Often we find that chapter by chapter he is more descriptive in detail of the instruments mentioned than the originals. But in this chapter it is the other way. The methods of treatment are copied from Celsus (VII. 10), Paulus (VI. 25), etc. but their elaborate accounts of the polypus-knife and the *specillum* are not followed. He writes here only of a sharp one-edged knife; and of a funnel for instillations into the nose. The

knife is not illustrated. The word used is *miqṭa'*, literally 'cutter', a word rarely used by him, and elsewhere denoting what we should call an osteotome. The funnel is original and is figured in two interesting drawings in the two MSS. The design shows (fig. 64) in the middle, a bowl; to the left hand, the spout; and to the right, the handle. Perspective is attempted but with no great success. Nevertheless it strikingly resembles a Roman lamp. A cannula for the same purpose is referred to but not described.

الفصل الرابع والعشرون فى علاج اللحم النابت فى الأنف

قد تنبت فى الأنف لحوم مختلفة زائدة منها شئ¹ يشبه العقربان الكثير الأرجل ومنها ما يكون لحما سرطانياً² متحجراً كمد اللون ومنه ما يكون لحما لينا غير كمد اللون، فما كان من هذه اللحوم ليناً³ ليست³ بخبيثة ولا سرطانية³

فينبغي أن تجلس العليل بين يديك مستقبل الشمس وتفتح منخره وتلقى الصنارة فى تلك اللحوم ثم تجذبها الى خارج ثم تقطع ما أدركت منها بموضع لطيف حاد من جهة واحدة حتى تعلم أن اللحم كله قد ذهب فإن بقى منه شئ لم تستطع قطعه فاجرده بأحد الآلات اللطاف برفق حتى لا يبقى منه شئ فإن غلبك الدم او عرض ورم حار فقابل به بما ينبغي او كان من الأورام الخبيثة فبادر فاكوه حتى ينقطع الدم وتذهب جميع اللحوم ثم تلقى فى الأنف بعد القطع خلا وما⁴ او شرابا فإن انفتح الأنف وسلكت⁴ منه الرطوبة الى الحلق فاعلم أنه قد برئ، فإن لم تنفذ الرطوبة على ما ينبغي فاعلم أن داخله⁵ لحما نابتا فى أعلى العظام المتخلخلة لم تصل الآلة بالقطع إليها فحينئذ ينبغي أن تأخذ خيطا من كان له بعض الغلظ وتعقد فيه عقدا كثيرة وتجعل بين كل عقدة قدر أصبع او أقل وتحيل⁶ العليل يدس طرف الخيط الواحد فى أنفه بمرود او بما أمكنه بعد أن يصنعه مثل النر ويجذب ريحه حتى يصل الى الخيشوم ويخرج على

وسالت 4. P. بخشنه ولا اسطوانيه 3. P. اسطولبا 2. H. سمي 1.

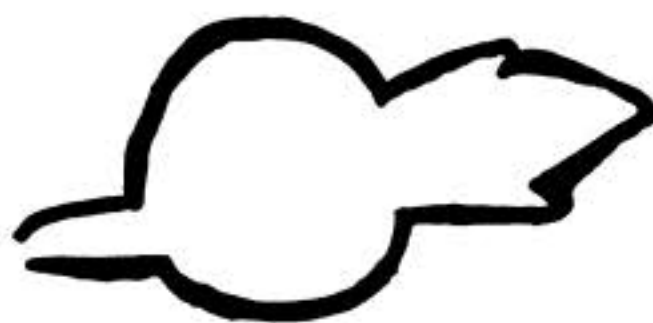
H. عن M, من 6. P. ومحل M, وتجعل H, وتحل 5. MP.

the throat. Boys at school often do this sort of thing, and it is quite easy for anyone who wishes. Then hold together the two ends of the thread, one coming out through the mouth and the other remaining in the nose; then saw off the polyps by means of the knots in the thread; continue doing this till you are sure that the growth has been cut off by the knotted thread. Then take out the thread and, after wiping away the blood, put into the nose a plug dipped in Egyptian ointment. Do this for three days or longer till the ointment has consumed the remnants of the polyp. Then, last of all, insert a lead tube in the nose for a few days till healed. If he need treatment with drying medicaments, use them. This is the figure of the instrument for instillation by which oil or medicines are dropped into the nose (fig. 64).

20 حلقه⁷ وكثيرا ما يفعل مثل هذا الفعل الصبيان في الكتاب وهو أمر
يسهل على من أراده ، ثم تجمع طرفي الخيط الطرف الواحد الذي
خرج على⁸ الفم والآخر الذي بقي في الأنف ثم تستعمل نشر اللحم
بالعقد التي في الخيط تفعل ذلك حتى تعلم أن اللحم قد تقطعت
بعقد الخيط ثم تخرج الخيط وتصير في الأنف بعد مسح الدم فتيلة
25 قد شربتها في المرهم المصري تفعل ذلك ثلاثة أيام أو أكثر حتى
يأكل المرهم جميع ما بقي من اللحم ثم تصير آخر شيء في الأنف
أنبوبة رصاص آياما حتى يبرأ ، فإن احتاج الى علاج يجفف استعملت
ذلك ، وهذه صورة المسعط الذي تقطر به الأدهان والأدوية في
الأنف:



Marsh



Huntington

Fig. 64

7. M. فمه. 8. HP. من.

It should be made of silver or bronze like a small lamp, its oil-container open, and with its channel likewise. If you like you may make its spout closed like a reed; and the oil-container of the instrument can be made covered over. It has a handle at the end, as you see, to hold it when heating the oil or whatever juice or other liquid you wish.

30 يصنع من فضة او نحاس شبه القنديل الصغير⁹ مفتوح¹⁰ المدهن¹¹ ومجراه ..
 كذلك وان شئت صنعت الأنبوبة مغلقة¹² كالقصبه ومدهن المسعط مسطوح¹².
 له مقبض في آخره كما ترى¹³ يمسك به¹³ اذا سخنت فيه الدهن او ما
 شئت من العصارات او الأشياء السيالة،

9. P. مفتوح معلوه. 10. cett. مفتوحه.

? مكسو و. An leg. ABHPSV. <مكشوف>. 12. cett. كالمدهن. 11.

13. P, H, ما نمسكه به تتمسك. 13.

CHAPTER TWENTY-FIVE. On warts growing on the end of the nose.

There frequently spring from the end of the nose warts that grow and increase daily till they disfigure the man. So you should cut them out when they first appear; totally eradicate them and apply to the place cauterization, either actual or by caustic. But if excision of them has been overlooked till they have grown big, then examine, and if the growth is stone-like, hard, and pale in colour, and with little sensation, do not interfere with it with an instrument, for it is a cancerous tumour. For I have often seen people cut these tumours, and great affliction resulted to the sufferer. But if the tumour be soft to the touch, not pale coloured, and you see it can be wholly removed, then purge the patient, and cut it off him fearlessly, and treat the place with astringents and styptics till healed.

**BOOK TWO. CHAPTERS TWENTY-FIVE
AND TWENTY-SIX**

These chapters present nothing in the way of instruments. There does not seem to be any definite source among the ancient authors for Chapter 25. The treatment of a split lip, etc., may come from Celsus (vii. 9) or from one of his imitators. The next, on nodules on the lip, is a kind of précis of Celsus vi. 13 on the subject.

الفصل الخامس والعشرون في الثآليل النابتة في طرف الأنف
 كثيرا ما ينبت في طرف الأنف ثلول فيعظم ويتزايد مع الأيام حتى
 يقبح منظره ولذلك ينبغي أن تقطعه في أول ظهوره وتستأصل جميعه
 ثم تحمل على الموضع إما الكي وإما الدواء المحرق الذي يقوم مقام
 5 الكي، فإن فات قطعه حتى يعظم فانظر فإن كان متحجرا صلبا كمد
 اللون قليل الحس فلا تعرض له بالحديد فإنه ورم سرطانى وكثيرا ما
 رأيت من قطع¹ هذا الورم² فعادت منه² بليّة عظيمة على صاحبه، وإن
 كان الورم لين المجسّة غير كمد اللون ورأيت أن القطع يمكن فـ
 جميعه فاستفرغ العليل واقطعه بلا حذر³ ولا توقّ³ وعالج الموضع بما
 10 يجفّف ويقبض حتى يبرأ،

1. AM. <مثل>. 2. HP, cett. فعاد. 3. B, om. H, cett. ولا توقى.

CHAPTER TWENTY-SIX. On suture of nose, lip, and ear, when there is discontinuity from a wound or the like.

You should know that when discontinuity occurs in one of these cartilages, treatment of them rarely does any good, except in a few people. When such a thing happens to anyone, look carefully, and if the wound be fresh and bleeding, bring the edges of the wound together with a suture, and dress them till they are healed. If the discontinuity has separated the edges, and both edges have healed, it is necessary to scrape both edges on the external skin till they bleed; then bring the edges together with a suture and dust over it dragon's blood and olibanum; and put over the powder a plaster of Palm ointment or some other of the regenerative ointments, and leave bandaged for two or three days; then unbandage and change the medicine, and let the sutures come away of themselves; and afterward dress with ointment till healed. Now the manner of suturing is to close the discontinuity, either with a needle, as we describe for suture of the belly, or with a thread as we tell you there.

الفصل السادس والعشرون في خياطة الأنف والشفة والأذن إذا

تفرّق اتّصالها عن جرح أو نحو ذلك

اعلم أنّه متى حدث تفرّق اتّصال في أحد هذه الغضاريف¹ فقلّ ما
ينجع فيها العمل إلّا في بعض الناس² فينبغي متى³ عرض لأحد شيء
5 من ذلك فانظر إن³ كان الجرح طرّاً بدمه أن⁴ تجمع شفتي الجرح
بالخياطة ثمّ تعالجه حتّى يبرأ، وإن كان تفرّق الاتّصال قد افترق
شفتاه وصار كلّ شقّ صحيحاً فينبغي أن تسلخ كلّ شقّ بشخّ جلدّه
الظاهر حتّى يدمى ثمّ تجمع الشفتين بالخياطة وتشدّها وتذرّ عليها
الشيان واللبان مسحوقين وتضع من فوق الذرور لصقة من المرهم النخل
10 أو غيره من المراهم الملحمة وتتركه مشدوداً يومين أو ثلاثة ثمّ تحلّه
وتبدل الدواء وتتركه حتّى تنقطع الخيوط من ذاتها ثمّ تعالجها
بالمرهم حتّى يبرأ، وصفة الخياطة أن تجمع تفرّق الاتّصال إمّا بالإبر
كما وصفنا في خياطة البطن وإمّا بالخيط كما عرفتك هناك،

BS. فان 3. H. فمتى، M. فينبغي إذا 2. P. الاعضاء العضروفية 1.
P. سلخاً رقيقاً عن AHS، على BV عن M، 5. 4. om. BHP.

CHAPTER TWENTY-SEVEN. On the extraction of nodules occurring on the lip.

A good many people sometimes get little hard swellings inside their lips, some resembling the vetch grain; some larger, some smaller. You should invert the lip, incise all along each nodule, catch it up with a hook, and cut it away all round. Then after incising rub pounded vitriol into the places until the bleeding stops. Then let him rinse with vinegar and salt, and dress the place with styptic drugs till the wounds heal.

الفصل السابع والعشرون في إخراج العقد التي تعرض في الشفتين
 قد يعرض لكثير من الناس في داخل شفاههم أورام صغار صلبة
 يشبه بعضها حب الكرسنة وبعضها أصغر وأكبر¹، فينبغي أن تخلص
 الشفة وتشق على كل عقدة وتعلقها بالصنارة وتقطعها من كل جهة ثم
 ٥ تحشو الموضع بعد القطع بزاج مسحوق² حتى ينقطع الدم ثم يتضمض
 بالخل والملح³ وتعالج الموضع بما فيه قبض الى أن تبرأ الجراحات،

1. om. P. 2. <محرق>M. 3. BV, om. cett.

CHAPTER TWENTY-EIGHT. On the excision of superfluous growths on the gum.

There often grows on the gum superfluous flesh which the Ancients call 'epulis'. You should take it up with a hook or grasp it with forceps and cut it at its root and let the pus or blood flow out. Then put on the place either pounded vitriol or one of the absorbent styptic powders. And if the growth returns after treatment—for they often return—excise a second time and cauterize; it will not come back after cauterization.

الفصل الثامن والعشرون في قطع اللحم الزائد في اللثة

كثيرا ما ينبت على اللثة لحم زائد تسميه الأوائل ابولس¹ فينبغي
أن تعلقه بصنارة أو تمسكه بمنقاش وتقطعه عند أصله وتترك المدة
تسيل أو الدم ثم تضع على الموضع زاجا مسحوقا أو أحد الذرورات
القابضة المجففة فإن عاد ذلك اللحم بعد العلاج فكثيرا ما يعود
فاقطعه ثانية واكله فإنه لا يعود بعد الكى،

1. M. اندوس، P. ابولوس، B. ابولوس.

CHAPTER TWENTY-NINE. On scraping the teeth with an iron instrument.

Sometimes there collect upon the inner and outer surface of the teeth and also between the gums, rough scales, ugly, sometimes black or yellow or green, from which corruption is communicated to the gums and thus the teeth become unsightly.

The patient should sit before you, putting his head in your lap; and you should scrape the teeth or molars on which you can discern crusts or gritty substance, till nothing remains; do them all in the like manner, black, green, yellow, and the rest, until they are all gone. If they disappear at the first scraping, good; but if not repeat the scraping on the following day and the second and third until you attain your purpose. You should know that molars need scraping-tools of many diverse forms and shapes according to the character of your undertaking; for the tool with which the inner surface of the teeth is scraped differs from the tool with which the outer

BOOK TWO. CHAPTER TWENTY-NINE

The scaling of teeth was an undertaking studied with great care. A whole arsenal of tools for this work is shown in both MSS. (fig. 65). The Huntington MS. gives them all thick fluted or serrated handles for good grip while the Marsh MS. shows them with thin smooth handles; but they are clearly the same. The various shapes of blade were to overcome difficulty arising from the shape or situation of any tooth. The word used for this type of tool is *mijrad*, indicating a scraper. Channing translates *rasorius* or

scalprum. This term occurs also in chapter 86 as a raspatory for bone operations; it will be discussed at that chapter. This scraper for teeth must then have been a long-handled tool with a short strong head pointed or edged or both, and varying much in outline; perhaps some for right-handed and some for left-handed work. It was used by hand and the scaling was done thus and not by blows. The scaling of teeth does not appear in the classical writings; so this is original.

الفصل التاسع والعشرون فى جرد الأسنان بالحديد

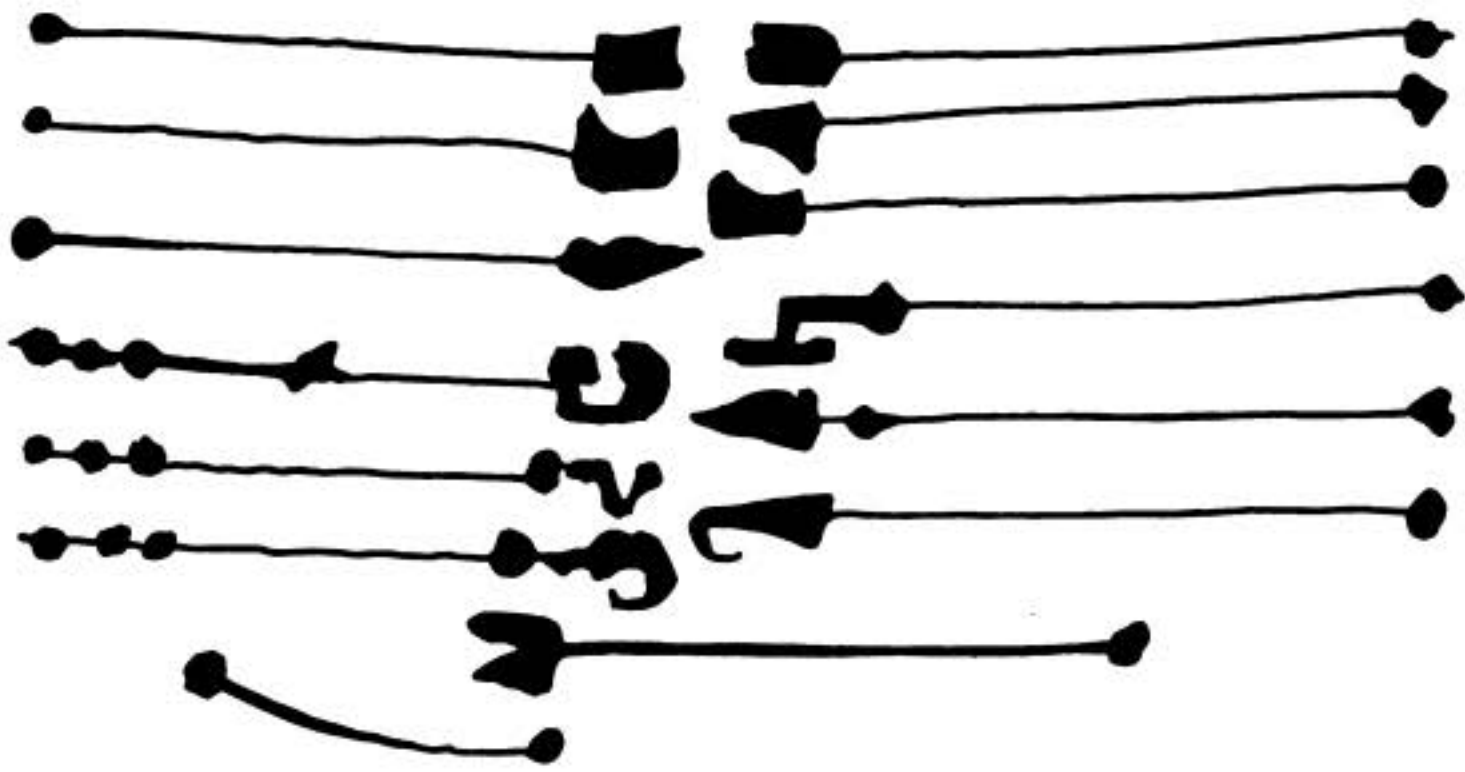
قد يجتمع فى سطوح الأسنان من داخل ومن خارج وبين اللثات قشور خشنة قبيحة وقد تسود وتصفّر وتخضر حتى يصل¹ من ذلك فساد الى اللثة وتقبح الأسنان لذلك ، فينبغى أن تجلس العليل بين يديك⁵ ورأسه فى حرك وتجرد الضرس والسن الذى ظهر لك فيه القشور والشئ الشبيه بالرمل حتى لا يبقى منه شئ² وكذلك تفعل بالسواد والخضرة والصفرة وغير ذلك حتى تنقى³ ، فإن ذهب ما فيها من أول الجرد وإلا فتعيد عليه³ الجرد يوما آخر⁴ وثانيا وثالثا⁴ حتى تبلغ الغاية فيما تريد ، واعلم أن الضرس يحتاج الى مجارد مختلفة الصور كثيرة¹⁰ الأشكال على حسب ما يتهيا لعملك من أجل أن المجرد الذى يجرد به الضرس من داخل غير المجرد الذى يجرد به من خارج والذى

1. V. حصل. 2. M. يفنا. 3. V. cett. عليها. 4. B. لا يبقى فيها شئ.

AHP. وثالثا ورابعا. 4.

surface is scraped; and that for scraping between the teeth is different again. Here is a number of scrapers, all of which you will have ready by you (fig. 65).

يجرد به بين الأرضاس على صورة أخرى، وهذه عدّة صور مجارد
تكون عندك كلّها معدّة:



Marsh



Fig. 65

Huntington

CHAPTER THIRTY. On the extraction of teeth.

You should treat toothache with every device and be reluctant to extract; nothing can replace the tooth when it is extracted, for it is a noble substance—until there is no means of avoiding extraction. When the patient is determined to have it out, act with deliberation till you are sure which is the painful tooth; for often the pain deceives the patient and he thinks the pain is in a tooth that is sound, so he has that one extracted; but the pain does not abate until the diseased tooth is removed. We have frequently seen this happen in the practice of the barber-surgeons. When you are quite sure which is actually the painful tooth you should cut away all round the tooth with a scalpel having a certain measure of strength, until the gum is separated all round. Then, with your fingers, or with a pair of fine forceps, first move the tooth slowly and gently till you stir it; then get a good grip on it with a pair of large forceps, holding the patient's head between your knees so that it does not move. Then draw the tooth straight out so as not to splinter it. And if it will not come out, then take one of these following instruments and gradually introduce it beneath the tooth all round; then try to move it as you did before. If the tooth has a hole in it or is decayed, you should plug the hole with a rag, forcing it in with the tip of a fine probe so that it will not break when you grip it with the forceps. You must completely scarify all round the gum. Take the utmost care not to splinter the tooth lest a piece should remain behind and arouse the patient's ills afresh, causing greater pain than before. Take care not to do those things that the ignorant barber-surgeons do in their rashness and haste in dental extraction, neglecting to employ the methods we describe. For they often bring great troubles upon people, the least of which is to break the tooth off

BOOK TWO. CHAPTER THIRTY

The extraction of teeth was well known to the Ancients from Hippocrates onward; very likely much earlier. Celsus writes at length on the subject, describing both the tooth forceps and the root forceps; the latter he names *ρίζάγρᾱ*. Paulus Aegineta (vi. 27) follows Celsus rather briefly, adding the term *ὀδοντάγρᾱ* to the vocabulary. Erasistratus is quoted approvingly by Caelius Aurelianus (*Morb. Chron.* ii. iv, para. 84) as being only willing to remove a tooth when it is in the last stage of decay. Erasistratus (second century B.C.), according to Caelius,

used an instrument made of lead called an 'odontogogue'—being made of lead to limit the force that might be exerted by the operator on the tooth! Most following writers also disapprove, in the main, of tooth extraction. Albucasis also stresses the irreplaceability of a tooth once extracted. Both MSS. give excellent illustrations of very practical dental forceps. Both are given handles with a back-bent curve to afford the hand purchase when pulling; and the handles are to be thick so as not to bend when straining. Figure 66 shows thick handles and

الفصل الثلاثون فى قلع الأسنان

ينبغى أن تعالج الضرس من وجعه بكل حيلة وتتوانى عن قلعه
فليس منه خلف اذا قلع لأنه جوهر شريف حتى اذا لم يكن بدّ من
قلعه، فينبغى اذا عزم العليل على قلعه أن تثبت حتى يصحّ عندك
5 الضرس الوجع فكثيرا ما يخدع العليل الوجع ويظنّ أنه فى الضرس
الصحيح فيقلعه ثم لا يذهب الوجع حتى يقلع الضرس المريض، فقد
رأينا ذلك من فعل الحجامين مرارا، فإذا صحّ عندك الضرس الوجع
بعينه فحينئذ ينبغى أن تشرط حول السن بمبضع فيه بعض القوة حتى
تحلّ اللثة من كلّ جهة ثم تحركه بأصابعك او بالكلايب اللطاف أولا
10 قليلا قليلا حتى تزغزه ثم تمكّن حينئذ منه الكلبتين الكبار تمكينا جيّدا
ورأس العليل بين ركبتيك قد ثقفته لا يتحرك ثم تجذب الضرس على
استقامة لئلا تكسره، فإن لم يخرج وإلا فخذ أحد تلك الآلات
فادخلها تحته من كلّ جهة برفق ورم تحريكه كما فعلت أولا، وإن كان
الضرس مشقوبا او متأكلا فينبغى أن تملأ ذلك الثقب بخرقه وتسدها
15 سدا جيّدا بطرف مرود رقيق لئلا ينفث² فى حين شدك عليه بالكلايب
وينبغى أن تستقصى بالشرط حول اللثة من كلّ جهة نعلما وتحفظ
جهدك لئلا تكسره فيبقى بعضه فيعود على العليل منه بليّة هي أعظم
من وجعه الأول، وإياك أن تصنع ما تصنع جهال الحجامين فى
جسرهم وإقدامهم على قلعه من غير أن يستعملوا ما وصفنا فكثيرا ما
20 يحدثون على الناس بلايا عظيمة أيسرها أن ينكسر الضرس وتبقى أصوله

P. نشعت، M. ينثقب. 2. M. عند العليل. 1.

short, leaving the whole or part of the root behind; or to remove the tooth together with a piece of the jaw bone, as I have often seen. Then after the extraction let the patient rinse with wine or vinegar and salt. If there occur haemorrhage from the place—a common occurrence—then pound up a little vitriol and stuff the place with it. If the vitriol does not avail, cauterize. The shape of the fine forceps with which you first move the tooth should be with long jaws and a short handle, thick, lest they bend when you take hold of the tooth. And this is the shape of the large forceps (fig. 66). As you see, they have thick handles so that when you apply pressure with them they do not give or bend; and short jaws. They should be of Indian iron or of steel, strongly made, the jaws tempered and having teeth fitting into each other so that a sure and firm grip may be obtained. Sometimes the jaws are made like a file, also to give a strong grip.

thick jaws, equal in length. The Marsh drawings differ from the Huntington in having beaked rather than toothed jaws. Perhaps this latter pattern would be an alternative, as Albucasis says: '*sometimes they are made like files*'. The straight shape

follows the teaching of Celsus: *Recta vero forfex ducenda est, ne inflexis radicibus os rarum . . . parte aliqua frangat* (VII. 12). The famous pair of forceps at Naples (see Milne, plate xliii) does not resemble this Arabic model and was certainly not used for teeth.

كلها او بعضها وإما أن يقطع ببعض عظام الفك كما شاهدناه مرارا ،
ثم يتمضمض بعد قلعه بشراب او بخل وملح ، فإن حدث نزف دم من
الموضع فكثيرا ما يحدث ذلك فاسحق حينئذ شيئا من الزاج واحش به
الموضع وإلا فاكوه إن لم ينفعك الزاج ، صورة الكلايب اللطاف التي
25 تحرك بها الضرس أولا تكون طويلة الأطراف قصيرة القبض غليظة لثلا
تنشئ عند قبضك بها على الضرس ، وهذه صورة الكلايب الكبار :



Huntington



Fig. 66

Marsh

تكون كما ترى غليظة المقابض حتى اذا قبضت عليها لا تعطى
أنفسها ولا تنشئ قصيرة الأطراف ، ولتكن من حديد هندی او من
فولاذ³ محكمة مسقية الأطراف وفي طرفها أضراس يدخل بعضها في بعض
30 فتقبض قبضا محكما وثيقا ، وقد تصنع الأطراف كهيئة المبرد فتكون أيضا
قوية الضبط⁴،

3. فولاذ H, V s. p. , P. بولاد 4. HP. القبض.

CHAPTER THIRTY-ONE. On the extraction of roots and of broken pieces of mandible.

When, in extracting a tooth, a broken-off root remains behind, you should apply to the place cotton wool soaked in butter for one or two days to soften it; then insert the tongs or forceps with stork-bill jaws; this is the figure of the forceps (fig. 67). The point should be made like a file or rasp on the inside. If it does not respond to your attempt to extract it with these forceps, you must dig down over the root and remove all the flesh, and then insert the instrument that resembles a small crowbar; this is its figure (fig. 68). It has a short rather thick extremity, and should not be

BOOK TWO, CHAPTER THIRTY-ONE

Paulus Aegineta, the usual source for Albucasis, does not refer to root extraction. Celsus, however, devotes some space to it and speaks of special forceps for the purpose called *ριζάγχα*. But it seems that the greater part of this chapter is original. First there are the forceps (*jift*) with stork-bill jaws. This instrument appears to be fine-pointed for the purpose of digging into the gum to reach the stump; this is shown well in the Marsh drawing (fig. 67). One of the handles is recurved as in the pair shown in the previous chapter. If these failed the operator should try with a vectis or lever. The Marsh illustration (fig. 68) is of a tool similar in shape, and probably use, to those employed at the present day. Others of various shapes are given in figures 69 and 70; some had stout triangular extremities that must have literally dug the stump out. Such a tool with two prongs is also shown, but in the Huntington MS. only (fig. 71) and with no specific name. The same MS. also alone shows a large hook (fig. 72) whose manner of use it is hard to understand. The last figure of the chapter is a pair of forceps (*jift*) for picking up fragments of bone broken off the mandible (fig. 73). The Marsh drawing suggests something like the modern dissecting forceps, whose blades are sprung at

the butt end. The Huntington drawing might be the same with the addition of a sliding collar; this looks very like the instrument in chapter 6 (fig. 46) for which the same word is used.

Forceps. This chapter affords some of the very best figures of the Arabian forceps; so a paragraph is now devoted to the general consideration of them. Albucasis uses three words denoting forceps or pincers:

1. *كاليب*—*kalālib*—definitely meaning forceps or pincers. From chapter 30 onwards it is used in this sense with special reference to the powerful jointed type. Nevertheless, the word is used alternatively to the next word (*jift*) for fig. 73. *Kalālib* are advised for extracting teeth (fig. 66) and for dental roots (fig. 67); picking a leech out of the pharynx (chapter 39—fig. 83); the extraction of a vesical calculus (chapter 60); for picking out the fragments of the foetal skull after crushing; extracting a sequestrum from a chronic sinus; for getting out an arrow buried in the skull or elsewhere (fig. 178); and in Book III for removing bone after drilling round with the *terebrum*. The word is also used to describe one form of the vaginal speculum (fig. 141) and of the cephalotribe (figs. 144 and 145).

الفصل الحادى والثلاثون فى قلع اصول الأضراس وإخراج عظام الفكوك المكسورة

إذا بقى عند قلع الضرس اصل قد انكسر فينبغى أن تضع على
الموضع قطنة بالسمن يوما¹ أو يومين² حتى يسترخى الموضع ثم تدخل
إليه الجفت أو الكلايب التى تشبه اطرافها فم الطائر الذى يسمّى
البلرجه² وهذه صورة الكلايب:



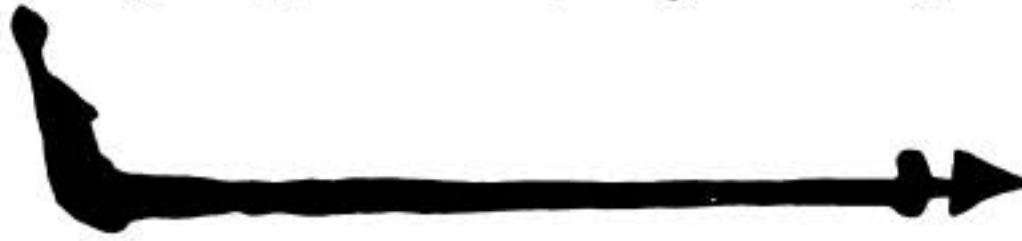
Huntington



Fig. 67

Marsh

تكون قد صنعت كالمبرد من داخل أو كالإسكفاج فإن لم يجبك
للخروج بهذه الكلايب فينبغى أن تحفر على الأصل وتكشف اللحم كله
بالمبضع ثم تدخل الآلة التى تشبه عتلة صغيرة التى هذه صورتها :



Marsh



Huntington

Fig. 68

1. AHP. وليلة. 2. S, البلرجه, A, اللوحه, M, الملوحة, B, المبلوحة,
H. التدرجه, P, البلرجه.

tempered lest it fracture. If the root comes out, good; if not, get assistance from the other instruments figured here. First, with a triangular point, somewhat stout (fig. 69). Another, triangular and slender (fig. 70). Some-

2. *جفت*—*jift*—a Persian word meaning a pair. This seems to have been rather tweezers, a suggestion based on figure 46, recommended for getting a foreign body out of the external meatus of the ear. In Book II it is given for picking up the granulations in chemosis; and for the first attempt at catching a leech in the throat (chapter 39—fine forceps). In chapters 60 and 84 it is named for laying hold of a vesical calculus, and of a bone fragment in a head wound, respectively; and in chapter 94 as the last resort for extracting an arrow; and in Book III, chapter 2, for removing bone from the skull after drilling. In these last references it is clear that these two words *jift* and *kalātib* may be used interchangeably.

3. *منقاش*—*minqāsh*—is used in several places in Book II. Chapter 8 refers to them, without figure, for holding warts on the eyelids, for excision; 17 for picking up the granulations of chemosis (*jift* used here interchangeably); 28 for laying hold of an epulis; 50 for removing a tumour arising from a twisted tendon—most likely a ganglion; then again for removing warts, either the common verruca, or ? haemorrhoids in the female pudenda, in chapters 73 and 82.

Apart from the word used, it seems that three main varieties of forceps are in the author's mind and may be distinguished in the course of the work from the text and from the figures.

Spring or dissecting forceps. These, judging from the Huntington figures were often fitted with a sliding collar to engage the tips together. They were slender and light and are illustrated by figures 46 and 73.

Jointed holding or grasping forceps were evidently the most usual type, resembling in principle the modern Spencer-Wells. All three words are found in different places for these. We cannot tell exactly what type of joint it was; most likely a simple riveted one. The common sort, with straight, toothed jaws are shown in figures 66, 67, and 178. With curved jaws they appear in figure 83.

Jointed crushing forceps are hinted at in connexion with the operation in chapter 60 for a vesical calculus; and illustrated in chapter 77 for crushing the foetal head in difficult labour; it had toothed jaws, either straight (fig. 145) or curved (fig. 144). This instrument is also called *مشداخ*—*mishdākh*—crusher. Though not illustrated, the same kind of instrument is described in chapter 60 for crushing a stone in the bladder; we might call it a lithotrite.

١٥ قصيرة الطرف غليظة قليلا ولا تكون مسقية^٣ لئلا تنكسر فإن خرج الأصل بذلك وآلا فاستعن بهذه الآلات الأخر التي هذه صورتها ، الأولى مثلثة الطرف فيها بعض الغلظ:



Marsh

Fig. 69

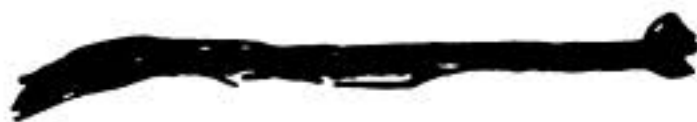


Huntington

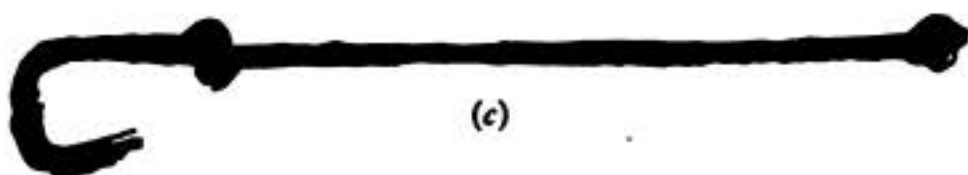
^٤صورة مثلثة لطيفة أخرى:



(a)



(b)



(c)

Marsh



(d)

Fig. 70

Huntington

تكون لطيفة ، om. BMV. 4. P. مستقيمة ، B. مستقيم ، A. مسعبة. 3. P. وهذه صورته مثلثة أخرى

times also we get help from this forked instrument (fig. 71) and beside this, from other instruments and appliances mentioned above under scraping of teeth. Sometimes also recourse may be had to this instrument resembling a large hook, figured thus (fig. 72). The hooked extremity is triangular in section, of some thickness lest it break, not tempered. You should know that dental instruments are very numerous, as are the other instruments, almost beyond reckoning. And the experienced worker with a knowledge of his craft may devise fresh instruments according as his work on actual cases suggests them to him. For there are certain diseases for which the Ancients did not mention any instruments, on account of the variety of them. Now if the mandible or one of the bones of the mouth be broken or decayed, explore the site with some instrument that is suitable for it, namely one of the instruments or forceps mentioned for extraction of roots. We also make

وقد نستعين أيضا بهذه الآلة ذات الشعبتين التي هذه أيضا
١٥ صورتها :

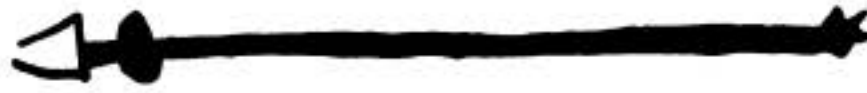


Fig. 71

Huntington

^٥وبغيرها من الآلات والحدائد التي تقدم ذكرها^٥ في جرد
الأضراس^٦، وقد نستعين أيضا بهذه الآلة التي تشبه الصنارة الكبيرة
التي هذه صورتها :

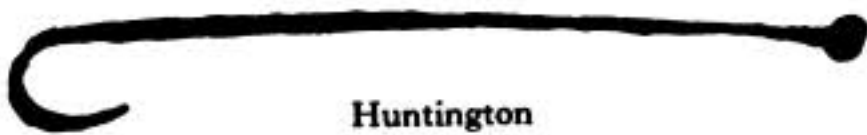


Fig. 72

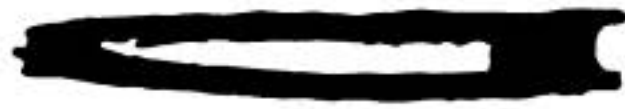
Huntington

مثلثة الطرف المعوج فيها بعض الغلظ قليلا لئلا تنكسر ، وتكون
^{٢٠}غير مسقية ، واعلم أن آلات الأضراس كثيرة وكذلك سائر الآلات لا
تكاد تحصى والصانع الدرب الحاذق بصناعته قد يخترع لنفسه آلات على
حسب ما يدلّه عليه العمل والأمراض أنفسها لأن من الأمراض ما لم
تذكر لها الأوائل آلات لاختلاف أنواعها ، فإن انكسر عظم من الفك
أو من أحد عظام الفم أو تعفن ففتش^٧ عليه في موضعه بما يصلح له
^{٢٥}من أحد هذه الآلات والكلايب التي ذكرت في إخراج الأصول ،

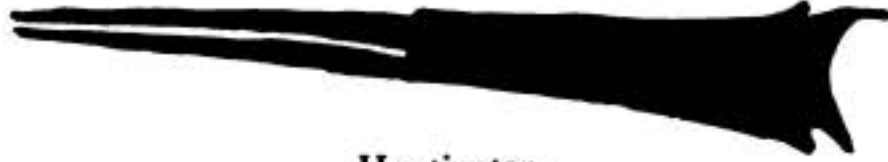
5. om. P. 6. om. BMV. 7. H فقيس M. فشق

use of forceps of this form (fig. 73). They are fairly thick, to grip the bone firmly lest it slip before the bone has been got out. Then cicatrize the place with suitable drugs. If the bone is only slightly decayed, scrape it clean of its decay and blackness, then dress till healed.

ونستعين بجفت هذه صورته :



Marsh



Huntington

Fig. 73

يكون فيه بعض الغلظ قليلا ليضبط به العظم فلا يفلت حتّى
يخرج العظم ، ونجبر الموضع بالأدوية الموافقة لذلك ، فإن كان
العظم فيه عفن يسير⁸ فاجرده من عفنه وسواده حتّى ينقى ثمّ عالجه
30 حتّى يبرأ ،

8. om. PV.

CHAPTER THIRTY-TWO. On the sawing-down of teeth growing on top of others.

When teeth grow in other than their natural place the appearance is very bad, specially when it occurs in women or slaves. So you should examine; if the tooth has grown out behind another tooth and it is impossible either to saw or file it down, then extract it. But if it be attached to another tooth, cut it down with an instrument of this kind (fig. 74). It resembles a small chisel and should be of Indian steel with a well-sharpened end. You should spread your cutting with it over several days on account of the hardness of the tooth and so as to leave the others undisturbed. If the tooth projects in such a way as to make filing possible, use a file of Indian iron, shaped like this (fig. 75). It should be wholly manufactured of Indian iron, its

BOOK TWO. CHAPTER THIRTY-TWO

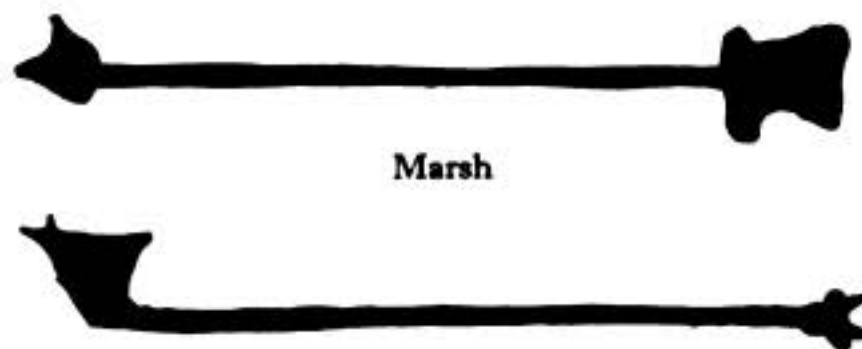
As to the cosmetic treatment of teeth, Paulus Aegineta gives a little on cutting down projecting teeth and mentions files and rasps for this purpose (vi. 28). In this chapter Albucasis refers to, first, an instrument 'resembling a small chisel', منقار, *minqār*. The word is unique here; figure 74 shows it in the Marsh MS. as a small chisel with a square blade in line with the handle, and in the Huntington MS. with a rather rhomboidal blade set at an angle to the shaft. It was for cutting or paring away the tooth when in line or set back. But if it projected it should be sawn or filed away by means of one of the special files he shows

(fig. 75). Marsh gives only one, flat, like a nail file; but the Huntington MS. gives three; the first, heart-shaped with fine teeth all round; the other two seem more like blades with fine teeth, possibly triangular in section. Files are not elsewhere shown; but the word مبرد—*mibrad*—is in other places used to describe the roughened or toothed surface of the jaws of forceps (chapter 31) and of two rougine-like instruments in chapter 19 for turning a lachrymal fistula into the nose, and in chapter 86 included in the list of bone instruments.

الفصل الثانى والثلاثون فى نشر الأضراس النابتة على غيرها¹

الأضراس اذا نبتت على غير مجراها الطبيعى قبحت بذلك الصورة ولا سيما اذا حدث ذلك فى النساء والرقيق فينبغى أن تنظر فإن كان الضرس قد نبت من خلف ضرس آخر ولم يتمكّن نشره ولا برده فاقطعه، وإن كان ملصقا بضرس آخر فاقطعه بهذه الآلة التى هذه

صورتها :



Marsh

Huntington

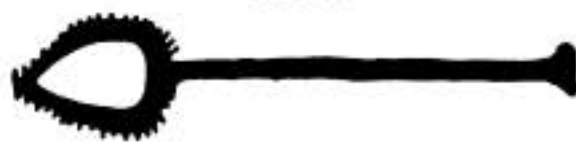
Fig. 74

وهى تشبه المنقار الصغير ولتكن من حديد هندى حادة الطرف جدا ويكون قطعك له فى أيام كثيرة لصلابة الضرس ولئلا تززع غيرها من الأضراس، وأما إن كان ناتيا متمكنا لبرادته فابرده بمبرد² من هندى

10 تكون هذه صورته :



Marsh



Huntington



Fig. 75

Huntington (margin)

1. P, من هندى AB, هندى V, 2. P, غير نظام BM, غير مجراها. 1.
H, om. M. من حديد هندى

handle too, and covered with very fine points to resemble the file used in making needles. You should file the tooth with it very slowly and gently over a period of many days so as not to shift the tooth and cause it to fall out; then finally smooth it and scrape it with one of the scrapers. If it be a tooth of which part has broken off and it hurts the tongue in speaking, file it down till you have disposed of the roughness of the break and the tooth is smooth and neither injures the tongue nor hinders speech.

يكون كَلِّهٌ³ من هند³ ونصابه منه⁴ رقيق النقش جدًا يكون كالمبرد
الذى تصنع به الإبر، تبرد به الضرس قليلا قليلا في أيام كثيرة
برفق لئلا تنزع الضرس فيسقط ثم تملسه آخرًا وتجرده ببعض المجارد،
وإن كان ضرس قد انكسر منه بعضه فكان يؤذى اللسان عند الكلام
١٥ فينبغي أن تبرده أيضا حتى تذهب بخشونة ذلك الكسر ويستوى
ويملا⁵ ولا يؤذى اللسان ولا يفسد الكلام،

3. BV, P, هنديا, M, هند, AH. هندی من حديد 4. om. H.

5. AHM. ويملا.

CHAPTER THIRTY-THREE. On interlacing loose teeth with silver or gold wire.

When the front teeth are loosened by some blow or fall and the patient cannot bite upon what he is eating lest they fall out, and you have without avail treated them with styptic medicines, the technique in this case is to bind the teeth with gold or silver wire. Gold is the better, for silver oxidizes and corrodes after some days, but gold remains for ever in its state and does not suffer this change. The wire should be moderate in thickness in accordance with the distance between the teeth. The method is to take the wire and run it doubled between two sound teeth; then with the two ends of the wire you weave between the loose teeth, either one or several, until you bring your weaving to a sound tooth on the other side; then you repeat your weaving back to the side whence you began; tighten it gently and judiciously till they do not move at all. You should tie the wire at the root of the teeth lest it slip. Then with the scissors cut off the two ends of the wire remaining over, and bring them together and twist them with forceps and hide them between a sound tooth and a loose tooth so as to not injure the tongue; then for the future leave them thus bound. But if it comes undone or breaks, bind them with another wire; so may he have the use of

BOOK TWO. CHAPTER THIRTY-THREE

This is a very interesting chapter on the wiring of teeth. The illustrations, which are both in the Huntington MS. (fig. 76), are beautifully carried out, and show clearly how this procedure was executed. At the end of the chapter he refers to artificial teeth made

of ox bone. No ancient author mentions this matter; but Martial refers to artificial teeth:

*Thais habet nigros, niveos Laecania dentes.
Quae ratio est? Emptos haec habet, illa suos.*
(Ep. v. 43)

الفصل الثالث والثلاثون فى تشبيك الأضراس المتحركة بخيوط الفضة او بخيوط الذهب

إذا عرض للأضراس القدامية تززع وتحرك عن ضربة او سقطة ولا يستطيع العليل العض على شئ يؤكل لكلاً تسقط وعالجتها بالأدوية 5 القابضة فلم ينجع فيها العلاج فالحيلة فيها أن تشد بخيط ذهب او فضة والذهب أفضل لأن الفضة تتزجر وتعفن بعد أيام والذهب باق على حاله أبدا لا يعرض له ذلك، ويكون الخيط متوسطاً فى الرقة والغلظ على قدر ما يسع بين الأضراس وصورة التشبيك أن تأخذ الخيط وتدخل انشاءً بين الضرسين الصحيحين ثم تنسج بطرفى الخيط 10 بين الأضراس المتحركة واحدة كانت او أكثر حتى تصل بالنسج الى الضرس الصحيح من الجهة الأخرى ثم تعيد النسج الى الجهة التى بدأت منها وتشد يدك برفق وحكمة حتى لا تتحرك البتة ويكون شدك الخيط عند أصول الأضراس لكلاً يفلت، ثم تقطع طرفى الخيط الفاضل بالمقص وتجمعهما وتقتلهما بالجفت وتخفيهما بين الضرس الصحيح 15 والضرس المتحرك لكلاً توذى اللسان، ثم تترك هكذا مشدودة ما بقيت، فإن انحلت او انقطعت شدتها بخيط آخر فيستمتع بها

them all his life. This is a figure of the teeth and the manner of interlacing two sound and two loose teeth, as you see (fig. 76).¹

After one or two teeth have fallen out they may be restored to their place and bound in as instructed, and become permanent. This can be done only by an expert and gentle practitioner. Sometimes a piece of ox-bone may be carved and made into the shape of a tooth, and placed in the site where a tooth was lost, and fastened as we have said, and it will last and he will get long service from it.

¹ Both illustrations are from H. There is no figure in M.

هكذا الدهر كله، وهذه صورة الأضراس وهيئة التشبيك في² ضرسين
صحيحين وضرسين متحركين كما ترى:

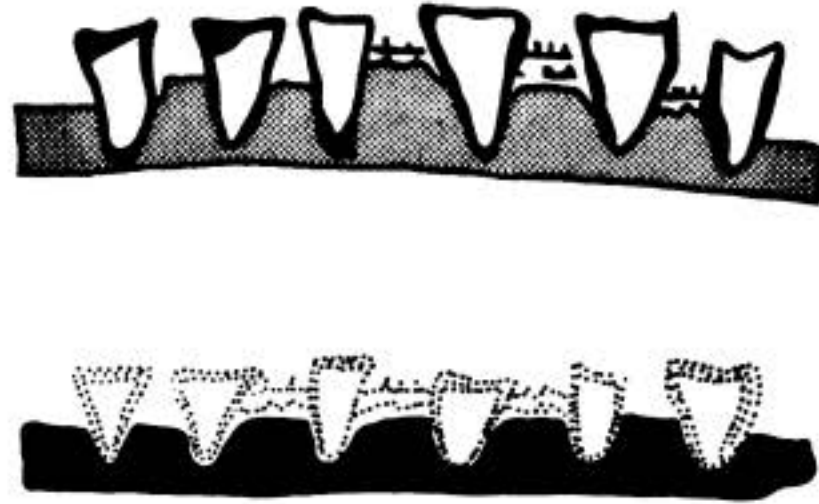


Fig. 76

Huntington

وقد تردّ الضرس الواحد أو الاثنين بعد سقوطهما في موضعهما²⁰ وتشبك كما وصفنا وتبقى، وإنما يفعل ذلك صانع درب رفيق، وقد
ينحت عظم من عظام البقر فيصنع منه كهيئة الضرس ويجعل في الموضع
الذي ذهب منه الضرس ويشدّ كما قلنا فيبقى ويستمتع بذلك،

2. V, om. cett.

CHAPTER THIRTY-FOUR. On incising the ligament below the tongue which is an impediment to speech.

Sometimes this ligament that occurs under the tongue is natural and congenital; or it may be accidental, owing to scarring from an injury. The operation for it is to open the patient's mouth, having his head in your lap, and lift his tongue; then cut that sinew-like ligament transversely till the tongue is freed from its hold. If it is hard and nodular, arising from scarring after an injury, catch it with a hook and slit it transversely until the ligament is severed and the knots undone. Beware of making the incision deeply into the flesh, or you may cut an artery there and haemorrhage may occur. After the cutting, let him rinse with rose-water or vinegar and cold water. Then put under the tongue a pad of linen, which the patient must keep in position at night to prevent the adhesion from forming again. If there should be haemorrhage, put pounded vitriol on the place; and if bleeding still prevails burn the spot with a lenticular cautery of suitable size and treat in the usual way till healed.

BOOK TWO. CHAPTER THIRTY-FOUR

This chapter is clearly based on Celsus (VII. 12), Aetius (VIII. 38), and Paulus (VI. 29).

الفصل الرابع والثلاثون فى قطع الرباط الذى يعرض تحت اللسان فيمنع الكلام

قد يكون هذا الرباط الذى يعرض تحت اللسان إما طبيعياً يولد به الإنسان وإما أن يكون عرضياً من جرح قد اندمل، والعمل فيه أن تفتح فم العليل ورأسه فى حرك وترفع لسانه ثم تقطع ذلك الرباط العصبى بالعرض حتى ينطلق اللسان عن إمساكه، فإن كان فيه بعض الصلابة والتعقد وكان ذلك من اندمال جرح فالق فيه صنارة وشقه بالعرض حتى ينبتر الرباط وتنحل العقدة، واحذر أن يكون الشق فى عمق اللحم فتقطع شريانا هناك فيعرض النزف، ثم يتعضض فى اثر القطع بماء الورد أو² بالخل والماء³ البارد، ثم ضع تحت اللسان فتيلة من كتان يمسكها العليل فى كل ليلة لئلا يلتحم ثانية، فإن حدث نزف دم فضع على المكان زاجا مسحوقا فإن غلبك الدم فاكو الموضع بمكواة عدسية تصلح لذلك ثم عالجه بسائر العلاج حتى يبرأ،

H. نباتا 4. M. او الماء B. او بالماء 3. HP. و 2. M. غير 1.

CHAPTER THIRTY-FIVE. On the removal of 'ranula' beneath the tongue.

Sometimes there occurs under the tongue a swelling resembling a small frog, which hinders the natural movements of the tongue; sometimes it grows so as even to fill the mouth. The operation for it is to open the patient's mouth in the full light of the sun and inspect the tumour. If you see that it is dark or black, and hard, and the patient has no sensation in it, do not interfere with it, for it is a cancer. But if it is inclined to be pale and has fluid in it, put a hook in it and incise it with a fine scalpel and free it all round; and if haemorrhage hinders you while operating apply pounded vitriol to it till the bleeding stops. Then proceed with your work till all is extracted; then let him rinse his mouth out with vinegar and salt. Then give all the suitable treatment till healed.

BOOK TWO. CHAPTER THIRTY-FIVE

This seems to have no counterpart in any classical author.

الفصل الخامس والثلاثون في إخراج الضفدع المتولد تحت اللسان
قد يحدث تحت اللسان ورم يشبه الضفدع الصغير يمنع اللسان
عن فعله الطبيعي وربما عظم حتى يملأ الفم، والعمل فيه أن تفتح
فم العليل بإزاء الشمس وتنظر من' الورم فإن رأيت كد اللون أو أسود
صلبا لا يجد له العليل حسا فلا تتعرض له فإنه سرطان وإن كان
مائلا الى البياض فيه رطوبة فالق فيه الصنارة وشقه بمبضع لطيف وخلّصه
من كلّ جهة، فإن غلبك الدم في حين عمك فضع عليه زاجا مسحوقا
حتى ينقطع الدم ثمّ عد الى عمك حتى تخرجه بكماله ثمّ يتضمض
بالخلّ والملح ثمّ تعالجه بسائر العلاج الموافق لذلك حتى يبرأ،

1. H, om M. الى

CHAPTER THIRTY-SIX. On the treatment of swelling of the tonsils and other swellings in the throat.

Sometimes there occur in the throat buboes called 'tonsils', which resemble the buboes occurring externally. When you have employed the remedies described in their own place, without effect, examine, and if the tumour be hard, dark coloured, and devoid of sensation, do not touch it with an instrument. If it be of a red colour, with a thick root, do not touch this with an instrument either, for fear of a haemorrhage; but let it be till it come to a head; then you may perforate it or let it burst of its own accord. But if it be pale coloured, round, with a slender pedicle, this is the kind that should be cut.

The operation for this is first to see, before operating, whether his inflamed tumour has already completely subsided or to some extent diminished. Then make the patient sit down in the full light of the sun with his head in your lap; open his mouth; and have an assistant before you to press back the tongue with an instrument like this (fig. 77). It should be made of

BOOK TWO. CHAPTER THIRTY-SIX

This chapter, on tonsils, nevertheless opens with a paragraph on what seems to be quinsy. Then come tonsils and their removal when enlarged; and descriptions of three instruments. The tongue-depressor is a spatula that accords with that first described by Oribasius (XLIV. 14) under the name of γλωσσοκάτοχος and then by Paulus (VI. 30, 2). Albucasis simply accounts it a slender curved metal instrument and shows it, in the Marsh figure (fig. 77), as a broad, thin, oval plate, the narrow end being probably a handle. The Huntington figure shows it in perspective with a view to demonstrate the right-angled curve at the junction of the handle with the tongue part.

The next is what we must call the tonsil-guillotine. The gland is held by a hook and then removed with this apparatus 'like scissors' as Albucasis says, without any further name. It seems unique to him and deserves notice. The Marsh illustration (fig. 78) hardly corresponds with his description and seems more like a pair of ordinary scissors as already shown. But the Huntington MS. drawings are important and clearly

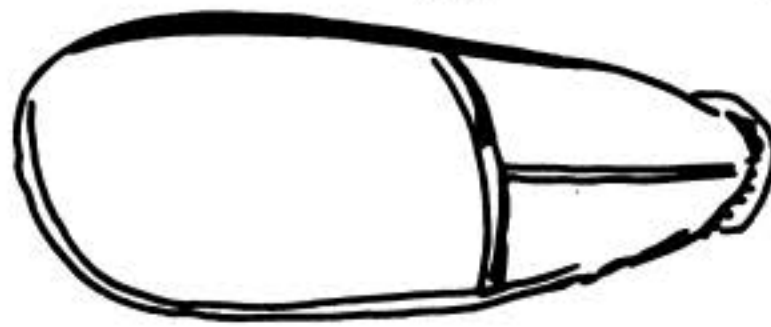
demonstrate an instrument of the *forfex* type with scissor handles; 'it is like *miqass* except that its extremities are curved, the beak of each meeting the other, and very sharp'. The blades are transversely placed instead of the cutting edge being along the length of the shank. It seems clear that while the tonsils were held away from the faucial arches with hooks the pedicles were cut through by the closure of the transverse blades which by their shape both cut away the tonsils and held them for removal from the throat.

Thirdly, in case the guillotine was not available, there is a curious hook-scalpel given (figure 79). The Marsh figure indicates a kind of small sickle blade with the sharp edge inside the curve so as to cut through the pedicle from behind forwards. It was perhaps a knife of this kind that Oribasius meant when he spoke of a σμῆλιν κοράκινον—a ravenbill knife. Then later Paulus (VI. 30, 2) says 'the tonsil is cut out by the root with an instrument called ἀγκυλοτόμον, suited to that hand; for there are two such instruments having opposite curvatures'.

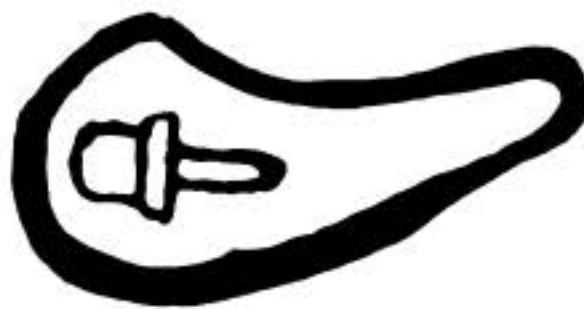
الفصل السادس والثلاثون في علاج ورم اللوزتين وما ينبت في الحلق
من سائر الأورام

قد يعرض في داخل الحلق غدد تشبه الغدد التي تعرض من خارج تسقى لوزتين اذا عالجتها بما ذكرت في التقسيم فلم تبرأ فانظر 5
فإن كان الورم صلبا كمد اللون قليل الحس فلا تتعرض له بالحديد وإن كان أحمر اللون وأصله غليظ فلا تتعرض له أيضا بالحديد خوف نزف الدم بل اتركه حتى ينضج فأما أن تبطئه وأما أن يتفجر من ذاته وإن كان أبيض اللون مستديرا وكان أصله رقيقا فهذا الذي ينبغي أن يقطع،

10 والعمل فيه أن تنظر قبل العمل إن كان قد سكن ورمه الحار سكونا تاما أو نقص بعض النقصان فحينئذ فأجلس العليل بهذا الشمس ورأسه في حرك وتفتح فمه وتأخذ خادما بين يديك نيكبس لسانه الى أسفل بآلة هذه صورتها :



Marsh



Huntington

Fig. 77

1. HP. <مجوفة>

bronze or silver, and slender like a knife. And when the tongue is depressed with its help, the tumour will be made manifest to you and your direct vision will fall upon it. Then take a hook and fix it in one tonsil and pull it forward as far as it will go; but be careful to not pull away with it any of the mucosa. Then cut it with an instrument of this form; it is like scissors except that its extremities are curved, the beak of each meeting the other, and very sharp. It should be made of Indian iron or Damascus steel (fig. 78). If you have not this kind of instrument, cut it with a scalpel of this form (fig. 79), on the one side sharp, on the other quite

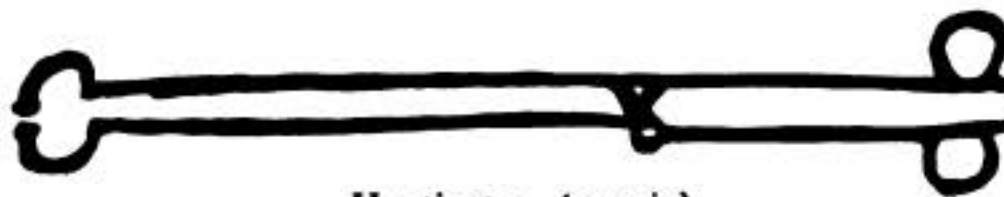
تصنع من فضة او من نحاس تكون رقيقة كالسكين فإذا كبست بها
 ١٥ اللسان وتبين لك الورم ووقع عليه بصرک فخذ صنارة واغرزها فی اللوزة
 وتجذبها الى خارج ما أمکن من غير أن تجذب معها شيئا من
 الصفاقات ثم تقطعها بآلة هذه صورتها تشبه المقص الا أن طرفيها
 منعطفان فم كل واحد منهما بحذاء الآخر حادان جدا تصنع من
 الحديد الهندي او الفولاذ^٢ المشقى^٣:



Marsh



Huntington



Huntington (margin)

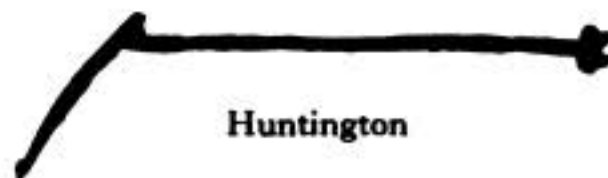
Fig. 78

فإن لم تحضر هذه الآلة ولأ فاقطعها بمبضع هذه صورته:

20



Marsh



Huntington

Fig. 79

cett. مسقيا , V مسقى , P مستقيما , M د مشقى . 3. B. الفولاذيه , MV فولاد . 2.

blunt. And when one tonsil has been cut away, remove the other in exactly the same manner. Then after the excision let the patient gargle with cold water or vinegar and water. But if there occur a haemorrhage let him gargle with water in which have been boiled pomegranate peel or myrtle leaves or similar styptics till the haemorrhage is stanchd; then treat till healed.

Sometimes there grow in the fauces tumours other than the tonsils; remove them just as described for tonsils. I once treated a woman for a tumour that had grown in her throat and was rather dark in colour and had little sensation. It had almost blocked the throat and the woman had only a narrow opening to breathe through, and was quite prevented from eating or drinking, so that she was at death's door, if she had so remained for a day or two. From the tumour there arose two offshoots, which had eventually emerged through the nostrils. So I made the utmost haste and, fixing a hook in one of them, drew it forward, and out came a sizeable piece. Then I cut it off where I had hold of it near the nostril. Then I did the same with the one projecting from the other nostril. Then I opened her mouth and depressed the tongue; then fastened the hook in the tumour itself and cut off a part of it, with only a little haemorrhage; and the woman's pharynx was freed and immediately she had a drink of water, then took some food. And from time to time, for long after, I continued to cut away this tumour. But fresh growth continually replaced what was excised till we both grew weary of it. Then I went about it astutely and cauterized the tumour high up in the throat, and it stopped growing. Then the woman left the district and I do not know what God has done with her since I had charge of her.

حادة من جهة واحدة وغير حادة من الجهة الأخرى، فبعد أن
تقطع اللوزة الواحدة تقطع الأخرى على هذا النوع من القطع بعينه،
ثم بعد القطع فتغرغر العليل بما بارد أو بخلّ وما، فإن عرض له
نزف دم تغرغر بما قد أغلى فيه قشور الرمان أو ورق الآس أو نحو
25 ذلك من القوابض حتى ينقطع النزف ثم تعالجه حتى يبرأ،

وقد ينبت في الحلق أورام أخر غير اللوزتين فتقطعها على ما
ذكرت في قطع اللوزتين سوا، وقد عالجت امرأة من ورم كان قد
نبت داخل حلقها يضرب إلى الكمودة قليل الحس قد⁴ كاد أن يسد
الحلق وكانت المرأة تتنفس عن مجرى ضيق وكان قد منعها الأكل
30 وشرب الماء وكانت قد أشرفت على الموت لو بقيت يوما أو يومين والورم
قد ارتفع منه فرعان حتى خرجا على ثقبتي أنفها فبادرت بالعجلة
فأغرزت في أحدهما صنارة ثم جذبته فانجذب منه قطعة صالحة ثم
قطعتها حيث أدركته من ثقب الأنف ثم فعلت ذلك بما برز من ثقب
الأنف الآخر ثم فتحت فمها وكبست لسانها ثم أغرزت الصنارة في نفس
35 الورم ثم قطعت منه بعضه ولم يسلم منه إلا دم يسير فانطلق حلق
المرأة وبادرت من ساعتها إلى شرب الماء ثم نالت من الغذاء فلم
نزل نطق من ذلك الورم مرارا زمانا طويلا والورم يخلف بدلا مما
يقطع حتى طال به وبها ذلك فتحيّلت وكويت الورم داخل الحلق
عليه فتوقف عن الزيادة ثم سافرت عن الجهة ولم أعلم ما فعل الله
40 بها بعدى،

4. ارتقى H. 5. M, أو 6. om. AP, عليه cett. P, ولو H.

CHAPTER THIRTY-SEVEN. On removal of the tumour of the uvula that is called 'uva'.

When a flux descends to the uvula and it swells and the uvula becomes white and elongated, then it is called 'columella'. And if it should be swollen below and rounded then it is called 'uva'. When it has been treated as mentioned in its section, and the treatment is unavailing, and you see the inflamed tumour subsiding and the uvula becoming thin, you should amputate it. Now those of them that are bunched up and rounded and not elongated, full of blood, or of a dark colour or black, and without sensation, these you should avoid incising; for this course is dangerous for the patient. But when you see them as I have described, somewhat pale and elongated, get the patient to sit in the sunlight and depress his tongue with the instrument described above; then take hold of the uva with a hook and draw it down and cut it off with one of the two instruments described for excision of the tonsils. You should not cut away more than up to the natural limit. For if you cut more off you cause injury to the voice and speech. Then, after excising, carry on the treatment on the lines described under removal of the tonsils, and treat till healed. But if the patient flinch from operation, then you must contrive to cauterize it, fearlessly and boldly. The method is to employ a caustic; you put the patient's head in your lap; then, having depressed the tongue with the instrument described above, take some of the corrosive fluid mentioned in the book on cauterization,

BOOK TWO. CHAPTER THIRTY-SEVEN

The removal of the uvula was an operation recommended by Celsus under certain conditions. Both Aetius and Paulus Aegineta give as much space as Albucasis to this entirely useless operation. Albucasis suggests no new instrument for the cutting of the uvula; but for cauterizing it he figures what seems to be a kind of caustic-holder. The question is, how is the illustration (fig. 80) to

be interpreted? The Huntington figure may show a kind of spoon with a point, the bowl being indicated by the space or hollow referred to in the descriptive text. The Marsh drawing seems to be the same thing passed through a cannula. The second set of drawings (fig. 81) show a mouth-piece for inhaling astringent vapours.

الفصل السابع والثلاثون فى قطع ورم اللهاة الذى يسمّى عنبه
 اذا انحدرت نزلة الى اللهاة وتورّمت وكانت بيضاء¹ مستطيلة فإنّها
 تسقى عمودا وإن كانت غليظة الأسفل مستديرة فإنّها تسقى عنبه، اذا
 عولجت بما ذكرنا فى التقسيم فلم ينجع العلاج ورأيت الورم الحارّ قد
 5 سكن عنها وكانت رقيقة فينبغى أن تقطعها وما كان منها مجتمعا
 مستديرا ولم يكن لها طول وكانت دميّة او كمدة اللون او سوداء² او
 لا حسّ لها فينبغى أن تجتنب قطعها ففيه غرر على العليل،
 فينبغى اذا رأيته على الصفة التى ذكرت من بياضها وطولها أن
 تجلس العليل بهذا³ الشمس وتكبس لسانه بالآلة التى تقدّم وصفها
 10 ثم تغرز الصنارة فى العنبه وتجذبها الى أسفل وتقطعها بأحد
 الآلتين اللتين ذكرتهما فى قطع اللوزتين وينبغى أن لا تقطع منها
 إلا الذى زاد على الأمر⁴ الطبيعى بلا مزيد لأنك إن قطعت منها أكثر
 أضرت بالصوت والكلام، ثم بعد القطع تستعمل ما وصفنا فى قطع
 اللوزتين وتعالجها حتى تبرأ، فإن جبن العليل عن قطعها فينبغى
 15 أن تستعمل الحيلة فى كيّها من غير خوف ولا حذر ووجه الكيّ فيها
 إنما هو بالدواء الحادّ وهو أن تضع رأس العليل فى حجر ك⁵ ثم
 تكبس لسانه بالآلة التى ذكرنا ثم تأخذ من الماء الحادّ الذى ذكرت

1. M, om. cett. 2. H. مقر.

make it up with quicklime to a medium consistency, and fill with it the hollow in this instrument, whose form is thus (fig. 80).¹ The end of it where you put the caustic should have a hollow like that of the spoon of a spoon-probe. With the patient lying on his side, letting the mucous secretions flow from his gullet out of his mouth so that none of the corrosive may run down his gullet and cause harm, you place the instrument right on the uvula. Then, steadying the hand that is holding the medicament, press it out on to the uvula for the space of half an hour until you see the uvula turn black and the corrosive action cease. If you wish, you can take some cotton wool twisted on the end of a probe, and, having soaked it in the caustic, apply the probe with the wool, down through a cannula till the wool sticks on the uvula. Do this over and over again till you have done all the cauterization you want, then let be; for it will shrink and fall off in three or four days. If you need to repeat the treatment, do so. After the cauterization, wipe all round the uvula with wool soaked in butter, and with that mop up all the caustic remaining round about it. Then let him rinse his mouth out with cold water and do you treat with external embrocations, and gargles within, till he is well. This kind of treatment is safer than incision and less to be feared. Sometimes uva is cured by a method milder

¹ The figure in the Cremona version is much more like a spoon-probe than those in the MSS.

فى باب الكى وتعجن به جيرا غير مطفاً وتجعله لا ثخينا ولا رقيقا
وتعلا منه تقعير هذه الآلة وهذه صورتها :

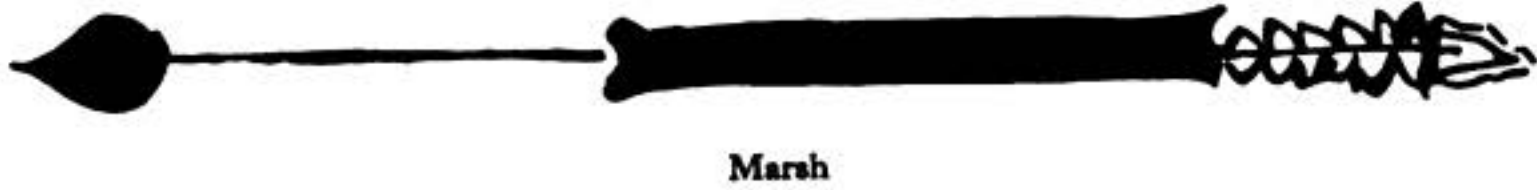


Fig. 80



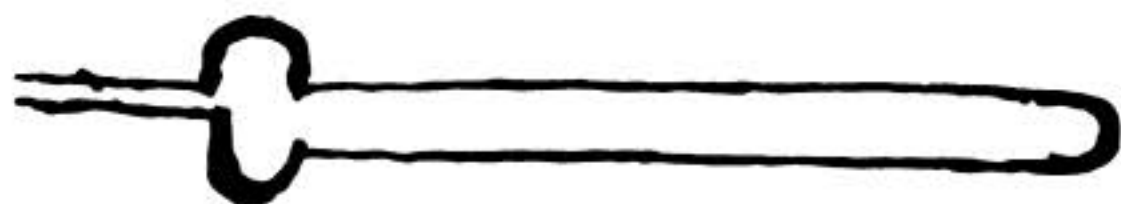
20 يكون طرفها الذى تضع فيه الدواء له تقعير كتقعير ملحقة المروء ،
وتضع الآلة بالدواء على اللهاة نفسها والعليل مضطجع على جنبه
ليسيل اللعاب من فيه من داخل حلقه³ لئلا ينزل منه الى حلقه شئ⁴
فيؤذيه ، ثم تمسك يدك⁵ بالدواء وأنت تعصرها على اللهاة قدر نصف
ساعة حتى تراها قد اسودت وسكن لدغ الدواء ، وإن شئت أن تأخذ
25 قطنة فتلقها على طرف مروء وتبل القطنة فى الدواء وتدخل المروء
بالقطنة فى أنبوبة من فوق حتى تلتصق القطنة على اللهاة تفعل ذلك
مرارا حتى تبلغ ما تريد من كى العنبة ثم تتركها فإنها تذبل وتسقط
بعد ثلاثة أيام او أربعة ، فإن احتجت أن تعيد الدواء أعدته ،
وبعد الكى تمسح حول العنبة بقطنة مشربة فى السمن وتنشف بها ما
30 حولها من الدواء ، ثم يتمضمض بالماء البارد وتعالج من خـارج
بالتنطيلات ومن داخل بالغراغر⁵ حتى يبرأ ، فهذا النوع من العلاج
أسلم من القطع وأبعد من الخوف ، وقد تعالج اللهاة أيضا بما هو

3. M, om. AB, الدواء cett. 4. M. الآله 5. M. بالغرغرات

than either incision or cautery, namely by means of vapour in the following manner: take pennyroyal and artemisia absinthium and organy and rue and wormwood and chamomile and southernwood and similar herbs and put them all, or some of them, in a pot, cover them with vinegar, and boil them. The pot should be luted with clay;¹ and there is to be a hole in the middle of the lid to which is fitted a hollow instrument like this, made of silver or bronze (fig. 81), and the end in which is the protuberance should be put in the patient's mouth so that the vapour passes up the tube to the uvula, which becomes of a very dark colour. Do this repeatedly till it sloughs away. Be careful not to apply this treatment at the first appearance of the tumour, for often you will aggravate the tumour; but you should do it at the decline of the inflammation. If you do not have this instrument, take a reed and fit an egg-shell on the end so that the patient's mouth is not burned; for the egg-shell will prevent the heat of the vapour from burning the mouth. This is a really good and safe treatment.

¹ Lit. 'the clay of philosophy', i.e. the luting-clay used by the alchemists.

الطف من الكى والقطع تعالج بالبخور على هذه الصفة، يؤخذ
 فوننج وزوفا وصعتر وسذاب وشيح وبابونج وقيصوم ونحوها من
 35 الحشائش فتجمعها كلها او بعضها فى قدر وتغمر فى الخل وتغلى
 والقدر مطبئة بطين الحكمة وتكون فى وسط الغطاء⁷ ثقبه ترغب عليها
 الآلة المجوفة على هذه الصفة تصنع من فضة او نحاس:



Marsh



Fig. 81

Huntington

وتدخل الطرف الذى فيه الرمانة فى فم العليل حتى يصعد
 البخار الى اللهاة على الأنوبة حتى تتكبد اللهاة نعما ثم تعيد
 40 عليها مرات حتى تدبل، وإياك أن تصنع هذا العلاج فى أول حدوث
 الورم فإنه كثيرا ما تزيد فى الورم وإنما ينبغى أن تفعل ذلك عند
 انحطاط ورمها الحار، فإن لم تحضرك هذه الآلة فخذ قصبة فرغب
 فى طرفها قشرة بيضة لئلا يحترق فم العليل لأن قشرة البيضة تمنع
 حر البخار أن يحرق الفم وهذا من جيد العلاج مع سلامته،

6. BM, محكم cett. 7. M, غطا القدر P, غطا القدر cett.

CHAPTER THIRTY-EIGHT. On the extraction of a fish-bone or anything else that sticks in the throat.

There often sticks in the throat a bone or fish-bone or something else. After you have depressed the tongue with the instrument in the full light of the sun, so that what is stuck in the throat is made as conspicuous as possible, you should then remove whatever can be seen and comes into view. But when it is not visible to you, and lies hidden in the throat, you should make the patient vomit before the food in his stomach is digested, for often the object comes out with vomiting. Or let him swallow a piece of turnip or a heart of lettuce or a morsel of dry bread; or take a marine sponge, dry, and tie it on a thread; then let him swallow the sponge and when it reaches where the sharp body is then quickly pull on the thread. Do this a number of times; for often the sharp body or bone will stick to the sponge and will come out. If it does not come out by the methods described, in this case employ an instrument made of lead, thus (fig. 82).

BOOK TWO. CHAPTER THIRTY-EIGHT

In the case of a foreign body in the throat the operator is offered two suggestions. First, a marine sponge may be tied on the end of a string, which, on being drawn back after swallowing, may bring the obstruction with it; that is, a kind of probang. If the probang fail a leaden hook (fig. 82) may be tried. Its leaden composition presumably enabled the

operator to bend it or its shaft at will to accommodate the patient's throat and the situation of the foreign body. Albucasis follows Aetius (VIII. 50) and Paulus (VI. 33); but this leaden hook is an original addition. The tongue-depressor shown in figure 77 is used here again.

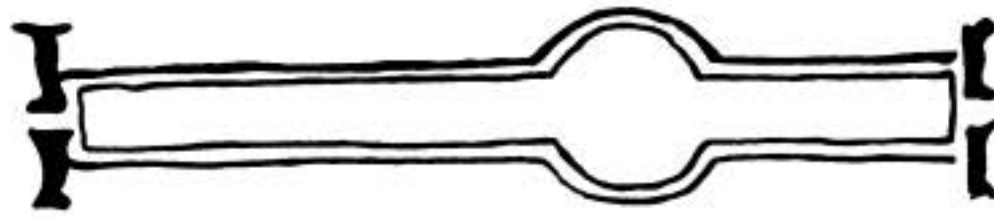
الفصل الثامن والثلاثون في إخراج الشوك وما ينشب في الحلق من غير ذلك

كثيرا ما ينشب في الحلق عظم او شوك سمك¹ او غير ذلك فينبغي
 أن تخرج منها ما كان ظاهرا يقع عليه البصر بعد أن تكبس اللسان
 5 بالآلة عند الشمس ليتبين لك ما في الحلق، وما لم يظهر لك وتواري
 في الحلق فينبغي أن تقي العليل قبل أن ينهضم طعامه في معدته
 فربما خرج الشيء الناشب بالقوى، او يتبلع العليل قطعة لفت او
 أصل خسة² او يتبلع لقمة من خبز يابس او تأخذ قطعة من الإسفنج
 البحرى اللين فتربطها في خيط ثم يتبلعها فإذا وصلت الى موضع
 10 الشوكه جذب الخيط بسرعة تفعل ذلك مرات فكثيرا ما تلصق الشوكه
 او العظم فيها وتخرج، فإن لم تخرج بما ذكرنا ولا فاستعمل
 آلة من رصاص على هذه الصورة:



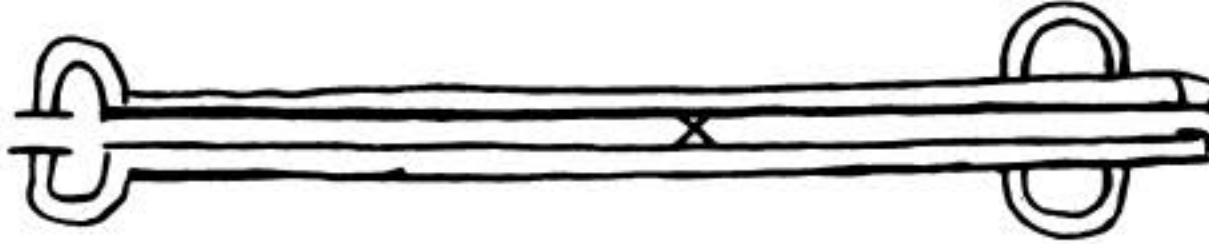
1. om. HM. 2. حصه MP, خس.

It should be a little thicker than a probe, with a crook at its extremity. The patient himself should introduce it into his own throat gently; he should raise the head backwards and take care not to touch the larynx lest coughing be aroused. And let him remove therewith the bone or sharp body. Or else let the doctor introduce it with his hand (although it is better if the patient himself introduce it, since he knows the site of the obstruction) and push it down and then draw up his hand with the instrument; all this according to the way it presents itself to him, till it is removed.



Cremona

Fig. 828



Channing

تكون أغلظ من المرود قليلا وفي طرفها تعقيف يدخلها العليل
 في حلقه برفق وهو رافع رأسه الى فوق ويتحفظ من مس حنجرتة لئلا
 يحدث به سعال ويدفع به العظم او الشوكة، او يدخلها الطبيب
 بيده، وادخال العليل لها أحسن لعلمه بموضع الشيء الناشب
 ويدفع الى أسفل او يجذب يده بالآلة الى فوق كل ذلك على قدر ما
 يتهيأ له حتى يخرج،

CHAPTER THIRTY-NINE. On the removal of a leech sticking in the throat.

When you treat a leech by the medical means spoken of in the appropriate section, with no effect, then inspect the patient's throat in full sunlight after depressing the tongue with the instrument I have described. If your gaze falls upon the leech, pull it out at once with a small hook or a fine pair of forceps. But if you cannot get hold of it, take a cannula and introduce it into the patient's mouth near the leech, then pass through the cannula a red-hot iron; do this repeatedly; while the patient must not drink at all that day. Then let him take a vessel full of cold water, open his mouth in it and rinse out with it, but let him not swallow a drop of it; and he should keep the movement of the water going by hand time after time; for the leech straightway falls off when it feels the water. If it does not come away by these means, fumigate the patient's throat with urine or with the juice of asafoetida, using the instrument described for fumigating the uvula. Do this several times, for then it will fall away. In fumigating, this is the way to set about it: take a pot containing live coals, fitted with a lid and a hole in the middle of the lid into which is fitted the end of the instrument. Then put in the aromatic; and the patient should apply his mouth to the end of the cannula, with his mouth closed to prevent the escape of the vapour, until he knows that the vapour has reached his throat; for the leech will at once come away. But if it does not come away, let the inhalation be repeated many times. Let the patient endure his thirst, and eat salty food and garlic and drink no water. It will inevitably be removed by this treatment. This is the figure of an instrument for extracting the leech from the throat when visible. It resembles forceps, as you see, except that it has this bend

BOOK TWO. CHAPTER THIRTY-NINE

The classical authors do not seem to deal with the emergency of a leech in the throat. Albucasis' detailed account of fumigation for the removal of the creature is to be regarded as illustrated by the drawing of the fumigator in chapter 37 (fig. 81).

The special pair of forceps is shown in figure 83.

The mouth-gag is shown in figure 84, in Marsh only, but with no account of either its design or its use beyond the note that it

was for holding the mouth open. It takes the form of a wide ring on a long handle. It may be supposed that the ring was lodged on or inside the teeth, keeping the jaws open while the next instrument was passed through. It is interesting that Oribasius speaks of a *στοματοδιαστολεύς* for keeping the mouth open while dealing with tonsils (XLIV. 14). This gag does not appear elsewhere in Albucasis' *Surgery*. The forceps have already been noted under chapter 31.

الفصل التاسع والثلاثون فى إخراج العلق الناشب فى الحلق
 اذا عالجت العلقه بما ذكرنا فى التقسيم من العلاج بالأدوية ولم
 ينجع فانظر حينئذ فى حلق العليل عند الشمس بعد أن تكبس لسانه
 بالآلة التى وصفت لك، فإن وقع بصرک على العلقه فاجذبها بصنارة
 5 صغيرة او بجفت لطيف محکم فإن لم تتمکن بها وإلا فخذ أنبوبة
 مجوفة فأدخلها فى حلق العليل الى قرب العلقه ثم أدخل فى جوف
 الأنبوبة حديدہ محمية بالنار تفعل ذلك مرّات ويصبر العليل عن الماء
 يومه كله، ثم يأخذ إجانة ملوئة ماء باردا ويفتح فمه فيه ويتعضض به
 ولا ييلع منه نقطة ويحرك الماء حيناً بعد حين بيده فإن العلقه
 10 تسقط على المقام اذا أحست بالماء، فإن لم تخرج بما وصفنا فتبخّر
 الحلق "بالبول" وبالخلتيت بالآلة التى وصفت فى بخور اللهاة تفعل
 ذلك مرّات فإنها تسقط، ووجه العمل فى البخور أن تأخذ قدرا
 فيها جمر حتى بالنار والقدر مغطيّة بغطاء فى وسطه ثقبه فترکب فى
 تلك الثقبه طرف الآلة ثم تلقى البخور ويضع العليل فمه فى طرف
 15 الأنبوبة ويغلق فمه لئلا يخرج البخور حتى يعلم أن البخور قد وصل
 الى حلقه فإن العلقه تسقط على المقام، فإن لم تسقط وإلا فيعاد
 البخور مرّات ويصبر العليل للعطش³ ويأكل المالح⁴ والثوم ولا يشرب ماء
 فلا بد أن تخرج بهذا التدبير، وهذه صورة آلة تجتذب بها
 العلقه من الحلق اذا وقع عليها البصر وهى تشبه الكلاب كما ترى

على العطش 3. B. مغطاه 2. cett. بالبق او P. بالتين او 1.M.
 M. الملح 4. HM.

for entry into the throat; and the two extremities are shaped like a bird's bill, with the roughness of a file. When they have hold of a thing they do not let go (fig. 83).

And another instrument with which to depress the tongue. It is a wide ring of iron, of such a size as to go into the mouth above the tongue. It is inserted into the mouth standing on its side, and the mouth stays open without the patient's volition; nor can he dislodge it at all until you turn it (fig. 84).

Inside the ring appear the words: 'The pattern of the instrument for opening the mouth; exactly of this size'¹

¹ This paragraph and the one preceding, with fig. 84, occur only in M.

20 ²⁰ إلا أن لها هذا التعقيد الذي يدخل الى الحلق وطرفاها تشبه فم الطائر فيها خشونة المبرد اذا فبضت على شئ لم تتركه:

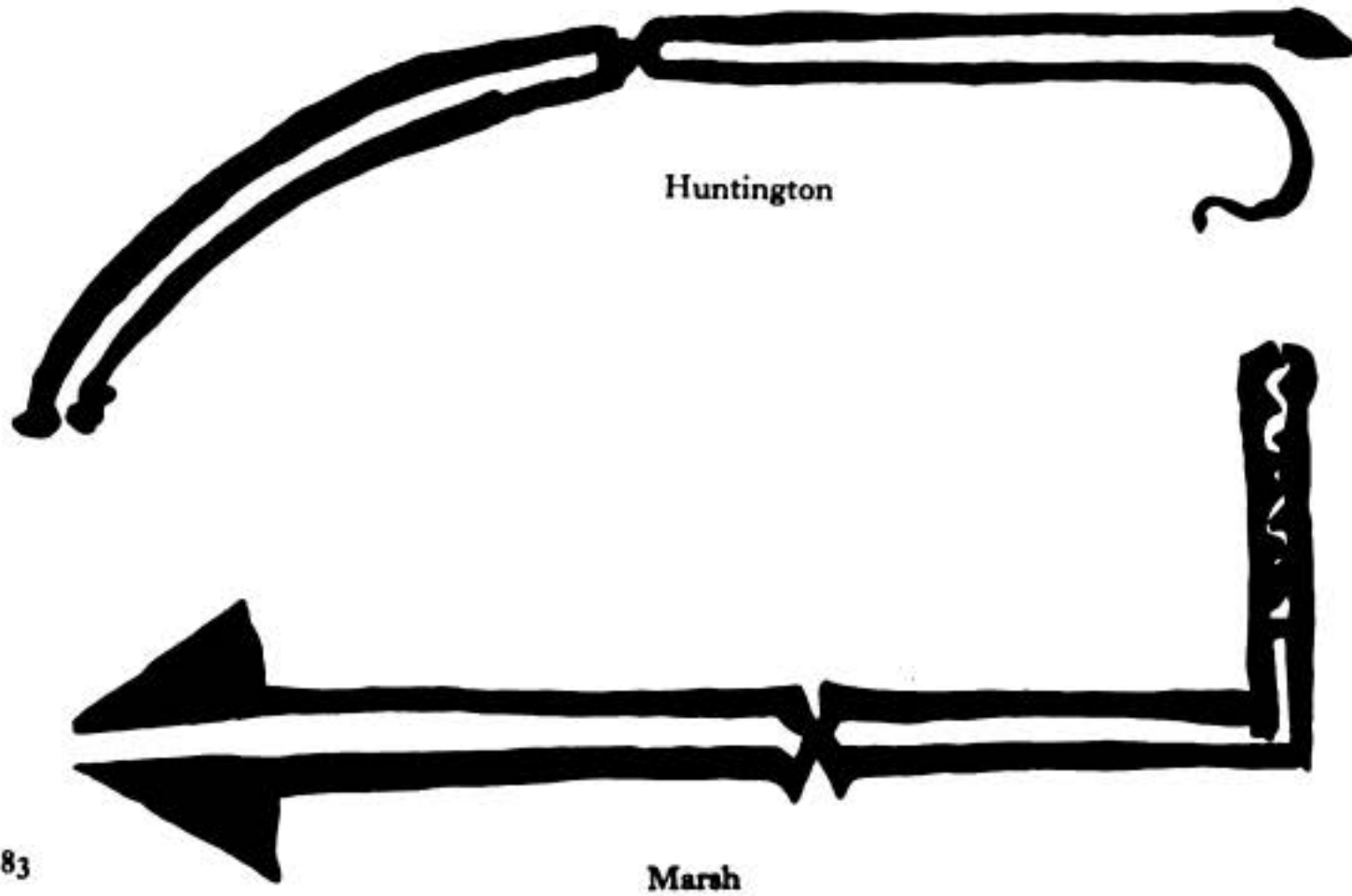


Fig. 83

Marsh

⁵ وآلة أخرى يكبس بها اللسان وهي حلقة واسعة من حديد بقدر ما تسع الفم فوق اللسان تدخل في الفم قائمة على جانبها فيبقى الفم مفتوحا بغير إرادة العليل ولا يستطيع أن يقلعها البتة حتى تنحيتها: (صفة الآلة التي يفتح بها الفم على هذا القياس بعينه) ²⁵

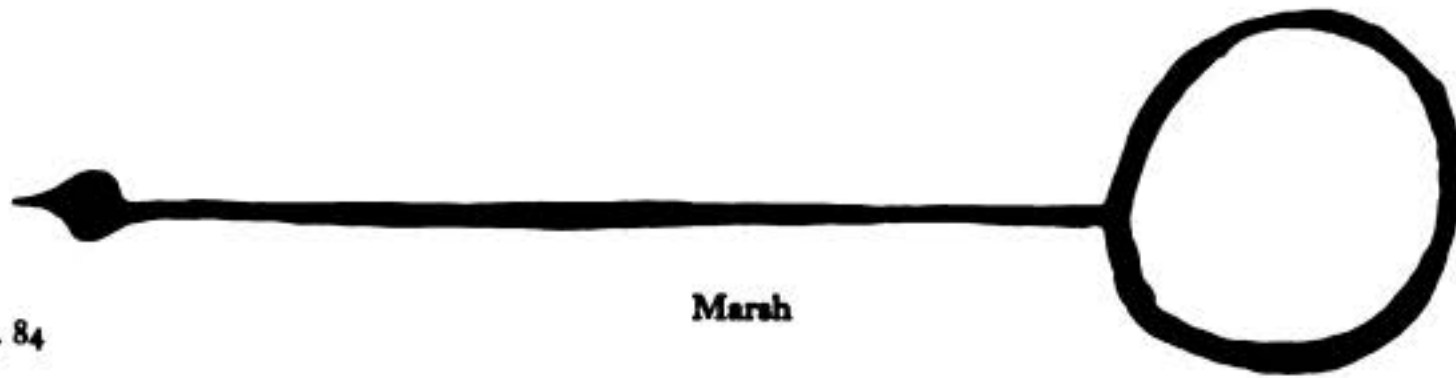


Fig. 84

Marsh

5. M, om. cett.

CHAPTER FORTY. A general dissertation on the perforation and incision of tumours.

The kinds of tumour are many and various, as will be mentioned in order in this book. They differ in the way they are to be perforated or incised, according to two criteria. One is the kind of tumour it is in itself and the humidities it contains. The other is the part of the body where it occurs. For the tumour occurring in the head is different from the tumour occurring on the posterior,¹ and a tumour occurring in a fleshy part differs from one on the joints; each having its separate category of operation. There are some tumours that should not be opened till after the pus in them is matured and ripe. But others should be opened when still raw and immature, such as a tumour near the joints. For when a tumour occurring near a joint lasts long enough to putrefy its surroundings, it often breaks down the ligaments or the tendons of the joint and causes paralysis in the limb. Or if the tumour be near a major organ, if you delay the opening of it until it ripens you will damage that major organ. In the same way, if it be near the anus you must open it, although unripe for opening. The reason why you must open an abscess near the anus while still unripe, before it is brought to a head, is to prevent it from putrefying the cleft and penetrating to the inner part of the anus and becoming a fistula, and incurable.

It is necessary too to know the time to open fully mature swellings: it is when the pain of the swelling is lessened, the fever departs, the redness and the throbbing are reduced, and the head of the abscess becomes wrinkled, with other signs. The perforation should be made in the lower

¹ H reads 'in the stomach'.

BOOK TWO. CHAPTERS FORTY TO FORTY-TWO

These three chapters follow closely the accepted Latin and Greek authors, Celsus (VII. 2), Galen (*Ad Glau.*, lib. II), Paulus Aegineta (VI. 34), etc. The old instructions are given fresh force by the addition of little sketches of how the incisions are to be made.

الفصل الأربعون فيه جمل من الكلام فى بطل الأورام وشقها
الأورام أنواعها كثيرة متفنة على حسب ما يأتى ذكرها واحدا
واحدا فى هذا الكتاب وهى تختلف فى بطلها وشقها من وجهين
أحدهما من نوع الورم فى نفسه وما يحوى من الرطوبات والنوع الثانى
5 من قبل المواضع التى تحدث فيها من البدن لأن الورم الحادث فى
الرأس غير الورم الحادث فى المقعدة¹ والورم الحادث فى موضع لحمى
غير الورم الحادث فى مفصل لكل واحد منها حكم من العمل، ومن
الأورام ما لا ينبغى أن تبطل إلا بعد نضج القيح فيها وكماله ومنها
ما ينبغى أن تبطل وهى نية لم تنضج على التمام مثل الأورام التى
10 تكون قريبة من المفاصل لأن الورم اذا حدث بقرب مفصل وطال أمره
حتى يتعفن ما حوله ربما أفسد رباطات او عصب ذلك المفصل فيكون
سببا لزمانة ذلك العضو او يكون الورم بقرب عضو رئيس لأنك اذا
أخرت بطله حتى ينضج أضرت بذلك العضو الرئيس او يكون بقرب
المقعدة فتبطله نيا وإنما يجب أن تبطل الورم نيا غير كامل النضج الذى
15 يكون بقرب المقعدة لئلا يعفن الغور فينفذ الى داخل المقعدة فيصير
ناصورا ويصير فى حد ما لا يبرأ،

وينبغى أن تعلم وقت بطل الأورام التى قد نضجت على التمام وهو
عند سكون وجع الورم وذهاب الحمى ونقصان الحمرة والضربان وتحدد²
رأس الورم وسائر العلامات، وينبغى أن توقع البطل فى أسفل موضع من

B, وحدد S, ويحدد H, وتحدد AV, وحدد 2. H. المعدة 1.
M. ويحدد P, وتجديد

part of the swelling if possible, so that the pus may more easily drain downwards; or else in the thinnest and most swollen part of the swelling. Your incision should be longitudinal if the swellings are in such places as hands or feet or in the site of joints, tendons, nerves, or arteries; and, in short, in all flat places where there is no curvature. In curved places let the perforation proceed according to the place. But when the swelling is in the fleshy parts it is best to leave the perforation, as we have said, until it is fully matured. For if you perforate it prematurely the sanious discharge will go on longer and will be excessively foul; and often both the edges and the depths of the opening will become indurated. Some swellings are perforated latitudinally if necessary, or having regard to the requirement of the part. In small swellings you should use a single perforation; while in large ones you should use wide or multiple perforations according to the size of the swelling. There are also some swellings that need a circular incision of the skin, and should be cut when they have become like a rag, and necrosed—which actually happens often in abscesses and sinuses. And there are some that should be incised triangularly; and others with an incision of myrtle-leaf form; e.g. a tumour on the groin. There are others again to which should be applied circular and lunate and similar incisions. Those that have no head, such as the smooth and flat ones, should be incised with only a simple perforation. When a swelling is large and has collected a large quantity of pus, and you perforate it, do not be in a hurry to get it all out at once; but get some of it out and then bandage it till another day; then again remove part of the pus; and so do, again and again, gradually, till it is

20 الورم إن أمكن ذلك ليكون أسهل لسيلان المدّة الى أسفل او فى
 أرقّ موضع من الورم وأشدّ نتواً ، وليكن البطّ ذاهبا فى طول البدن
 إن كانت الأورام فى نحو اليدين والرجلين ومواقع العضلات والأوتار
 والعصب والشريانات وبالجملة فى جميع المواضع المستوية التى لا
 انثناء لها ، وأما التى تنثنى فليذهب بالبطّ على حسب ذلك الموضع
 25 وأما اذا كان الورم فى المواضع اللحميّة فالأجود أن تترك بطّه حتّى
 يستحكم نضجه كما قلنا على التمام فإنك إن بططته قبل ذلك طال
 سيلان الصديد منه وكان كثير الوضر والوسخ وربما صلبت شفتاه وغوره ،
 وبعض الأورام قد تبطّ على عرض البدن عند الضرورة او على حسب ما
 يحتاج اليه العضو ، وينبغى أن تستعمل فى الأورام الصغار بطّا
 30 واحدا وفى الأورام الكبار بطّا واسعا او شقوقا كثيرة على قدر عظم
 الورم ، وقد يكون من الأورام ما ينبغى أن يقرّ الجلد ويقطع اذا
 كان قد صار كالخرقة وصار فى حدّ ما قد مات مثل ما يعرض فى
 كثير من الدبيلات والمخابئ ، ومنها ما يشقّ شقا ذائلا ثلاث زوايا
 ومنها ما يقطع منه كشكل ورقة الآس كورم الأربيّة ومنها ما يستعمل
 35 فيه الشقّ المستدير والشقّ الهلالى ونحوها من الشقوق ، وما لم يكن
 له رأس مثل الأورام الملّس المسطّحة فينبغى أن يبطّ بظّا بسيطا
 فقط ، وينبغى اذا كان الورم عظيما وقد جمع مدّة كثيرة وبططته أن
 لا تبادر فتخرج القيح كلّ فى ذلك الوقت بل أخرج منه بعضه ثمّ
 شدّ الورم الى يوم آخر ثمّ أخرج بعض القيح أيضا تفعل ذلك مرارا

3. H. لحوم. 4. H, M, ذى. cett.

all got out. This particularly applies if the patient be in a weak state, or a pregnant woman, or a baby, or a decrepit old man; for the animal spirit is very often dissolved with the sudden evacuation of the pus, and the patient dies unexpectedly. Be very careful therefore, with this sort. Then, after you have opened the tumour, you should cleanse the wound and consider: if the tumour has only a small opening, or it is one simple incision, employ swabs of lint or cotton wool; but if it is a large tumour with multiple incisions, introduce a swab into each incision so that they meet. And if the tumour was such that you cut away a part of the skin, or sliced the tumour, you will need to pack it with cotton wool or plucked linen, dry; and bandage until the third day. Then remove it and treat with the needful ointments until healed. If a haemorrhage occurs while you are operating, use cold water and vinegar, soaking a lint rag in both and frequently applying it to the place. And if the bleeding still persists then it is necessary to employ the method and the treatment and the powders that we have prescribed in many parts of this book and in their own sections. Now if this should be in winter and the site of the tumour abound in nerves, you should have some pads soaked in hot wine and oil and then apply to the place. But if it be in summer and the parts be fleshy, apply the pads soaked in water and oil, or wine and oil, all being cold, till the third day, as we have said. Then unbandage the tumour and wipe it and give it the treatment suitable

40 على تدريج حتى تخرج جميعه ولا سيما إن كان العليل ضعيف القوة
 او امرأة^٥ حاملا او طفلا صغيرا او شيخا^٦ هرم فإن الروح الحيوانى كثيرا
 ما ينحل مع خروج القيح دفعة فربما مات العليل وأنت لا تشعر
 فاحذر هذا الباب حذرا عظيما ، وبعد بطك لهذه الأورام ينبغى أن
 تمسح الجرح وتنظر فإن كان جرح الورم صغيرا او كان الشق واحدا
 45 بسيطا فاستعمل الفتل من الكتان او القطن البالى وإن كان الورم
 عظيما وكانت شقوق البط كثيرة فينبغى أن تدخل فى كل شق فتيلة
 حتى يصل بعضها الى بعض ، وإن كان الورم قد قطعت من الجلد
 بعضه او قوته فينبغى أن تحشوه بالقطن البالى او بهدب الكتان من
 غير رطوبة وتشده الى اليوم الثالث ثم تنزعه وتعالجه بما ينبغى من
 50 المراهم حتى يبرأ ، فإن عرض نزع دم فى حين عملك فاستعمل الماء
 البارد والخل بعد أن تشرب فيهما خرقة كتان^٧ وتحملها على الموضع
 من النزف مرات ، فإن دام النزف فينبغى أن تستعمل التدبير
 والعلاج والذرورات التى وصفنا فى مواضع كثيرة من كتابنا هذا ومن
 التقسيم ، فإن كنت فى زمن الشتاء وكان موضع الورم كثير العصب
 55 فينبغى أن تبل الرفائد بشراب وزيت حار وتضعها على الموضع ، وإن
 كنت فى الصيف وكانت المواضع لحمية فينبغى أن^٧ تحمل الرفائد^٧ مشربة
 بما^٧ زيت او بشراب وزيت كل ذلك بارد حتى اذا كان اليوم الثالث
 كما قلنا فينبغى أن تحل الورم وتمسحه وتستعمل فى علاجه ما شاكره

5. codd. حامل او طفل صغير او شيخ 6. om. BMV. 7. تحل
 H. الرفايد وتردها

to it, until cured. This is the information you need about the treatment of tumours in general. As for the particulars, I now review the way to treat each tumour, by chapters, in detail.

حتى يبرأ ، فهذا ما تحتاج اليه من معرفة علاج الأورام على
٦٥ الجملة وأما طريق التفصيل فقد ذكرت كل ورم كيف السبيل الى علاجه
مبّوأ ملخصاً ،

CHAPTER FORTY-ONE. On opening superficial tumours of the scalp.

Small swellings form in the scalp, which are of the various kinds of cyst, contained within membranes which form a capsule to them like the crop of a chicken. There are many kinds of these. There are fatty ones, there are those containing a liquid resembling black slime, there are those containing a liquid resembling porridge and gruel and the like, while others are stony hard. It is not dangerous to open and extract any of them, so long as you do not encounter an artery in excising them.

The operation for incising them begins by exploring them with the instrument called an explorer, figured lower down, so as to get to know what sort of contents they have. If they are the sort that contain fluid, incise them with a simple longitudinal incision, thus (fig. 85). Begin your incision at the letter *b*, to letter *g*; and when the humidity is emptied dissect away the capsule containing it, whole, not leaving the least remnant. For often it comes back if any has been left behind. Then dip some cotton wool in Egyptian ointment if you have some; if not, in saline; and pack it in the wound and leave till next day, for that will destroy the remains of the cap-

الفصل الحادى والأربعون فى الشق على الأورام التى تعرض فى جلدة الرأس

تعرض فى جلدة الرأس أورام صغار وهى من أنواع السلع تحويها
صفاقات هى لها ظروف كأنها حوصلة الدجاجة وأنواعها كثيرة فمنها
5 شحمية ومنها ما تحوى رطوبة تشبه الحمأة ومنها ما تحوى رطوبة تشبه
الدشيش والحساء ونحو ذلك ومنها ما هى متحجرة صلبة وكلها لا
خطر فى شقها وإخراجها ما لم يعترضك عند شقها شريان،
والعمل فى شقها أن تسبرها أولاً بالآلة التى تأتى صورتها بعد
هذا التى تسمى المدس حتى تعلم ما تحوى فإن كان الذى تحوى
10 رطوبة فشقها شقاً على الطول شقاً بسيطاً على هذه الصورة:

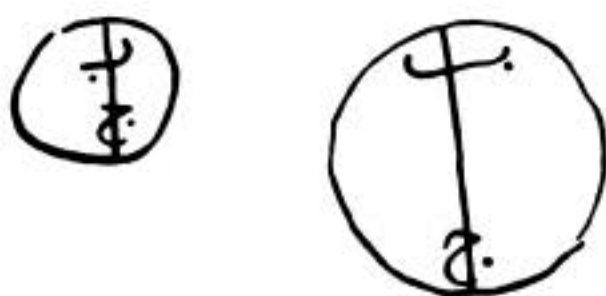


Fig. 85

Marsh

وابداً بالشق من خط ب إلى خط ج فإذا تفرغت الرطوبة فاسلخ
الكيس الذى كان يحوى تلك الرطوبة واقطعه جميعه ولا تترك منه
شيئاً البتة فكثيراً ما يعود اذا بقى منه شيء، ثم اغمس قطنه فى
المرهم المصرى¹ إن حضر وإلا فى ² 'ما' الملح² واملاً به الجرح واتركه الى
15 يوم آخر فإنه يأكل ما بقى من الكيس، ثم أعد عليه القطنه بالمصرى¹

1. M. البصرى. 2. V, M. الملح, A. ما ملح, cett.

sule. Then repeat the cotton wool with Egyptian ointment a second time, or a third if need be, till it is certain there is nothing of the cyst left. Then treat the wound with ointments until healed.

If the tumour contains a fatty cyst, incise thus (fig. 86), a cruciform incision; then hook up the edges of the incision, dissect away every direction, and strive to extract the containing capsule. If you should come across an artery, deal with it in the manner already described.

Carry out the same manner of incision and treatment for a stony tumour, just as I have described. It is easier to open a hard tumour, for it has little blood and humidity; and sometimes these tumours on some people's heads have no humidity at all. I myself cut down upon a tumour in the head of an elderly woman and I found the tumour as hard as a stone, rough and white, which it was impossible to break, and which if thrown at anyone would have injured him. For all tumours arising in the head other than these, such as those which occur in children's heads and those at the root of the ear, make a simple incision. You should always begin your incision from below to allow an easy downward flow for the pus. Then treat with suitable after-treatment.

ثانية وثالثة إن احتجت الى ذلك حتى تتيقن أنه لم يبق من الكيس
شيء فحينئذ عالج الجرح بالمراهم حتى يبرأ،
وإن كان الورم تحوى سلعة شحمية فشققها على هذه الصورة:



Fig. 86

Marah

شقا مصلبا والى الصنانير فى شفتى الجرح واسلخه من كل جهة
20 ورم جهديك فى إخراج الصفاق الذى يحويها، فإن اعترضك شريان
فاصنع ما وصفت لك بعد ذلك فاصنع فى الورم إن كان متحجرا من
الشق والعلاج بعينه على ما ذكرت، والشق على الورم المتحجر
أسهل لأنه قليل الدم والرطوبة وقد يكون بعض هذه الأورام التى فى
الرأس فى بعض الناس لا رطوبة معها البتة وذلك أتى شقت على
25 ورم فى رأس امرأة عجوز فالفيت الورم كالحجر الصلب خشنا أبيض لم
يستطع على كسره ولو رمى به أحد لشجه، وما كان من سائر الأورام
الحادثة فى الرأس غير هذه كالأورام التى تعرض فى رؤوس الصبيان
وعند أصول الآذان فشققها كلها شقا بسيطا واجعل بطها من أسافلها
ليسهل جرى المادة الى أسفل ثم عالجها بما يوافقها من العلاج،

3. H. اعرضك، M. عرضك، V. عارضك.

4. B. قبل. 5. MV. الصلب، cett. 6. MV. الأورام.

CHAPTER FORTY-TWO. On the incision of scrofulous glands¹ in the neck.

Tumours of this kind often occur in the neck and in the axilla and in the groin; and sometimes in other parts of the body. Those occurring in the neck are sometimes single and sometimes multiple, one arising from another; and each scrofula is contained in a capsule of its own, like the cysts and tumours of the head that we have described. There are many kinds of these glands; some are stony, some contain humidities, some are malignant and do not respond to treatment. But those that you find by touch to be benign and are of a colour not greatly differing from the skin, freely movable in any direction, not adherent to the nerves of the neck nor to a jugular vein, nor to an artery, and are not deep-lying; these should be incised with a simple incision from above downwards, from line *g* to line *b*² (fig. 87) and dissect away all round and draw the edges of the skin apart with one or two hooks or with several if necessary, as we said on the subject of tumours of the head, and draw them out very slowly. Be most careful not to cut a blood-vessel or nerve. The scalpel should not be over sharp lest you make the incision too big, or the patient flinches and so you cut open that which does not need cutting. If you cut a vein or artery and be

¹ Lit. 'pigs'.

² H wrongly puts *b* above and *g* below in the diagram.

الفصل الثانى والأربعون فى الشق على الخنازير التى تعرض فى العنق

كثيرا ما تعرض هذه الأورام فى العنق وتحت الإبطين وفى
الأريتين وقد تعرض فى سائر الجسم ويكون الذى يعرض فى العنق
5 منها واحدة ويكون كثيرة ويتولد بعضها من بعض وكل خنزيرة منها
تكون فى داخل صفاق خاص لها كما يكون فى السلق وأورام الرأس
كما وصفنا ، وأنواع هذه الخنازير كثيرة منها متحجرة ومنها ما تحوى
رطوبات ومنها خبيثة لا تجيب الى العلاج ، فما رأيت منها حسنة¹
الحال فى اللس وكان ظاهرها قريبا من لون الجلد تتحرك الى كل
10 جهة ولم تكن ملتزقة بعصب العنق ولا بوداج² ولا شريان ولا كانت
غائرة فينبغى أن تشقها شقا بسيطا من فوق الى أسفل البدن على
هذا الشكل من خط ج الى خط ب:

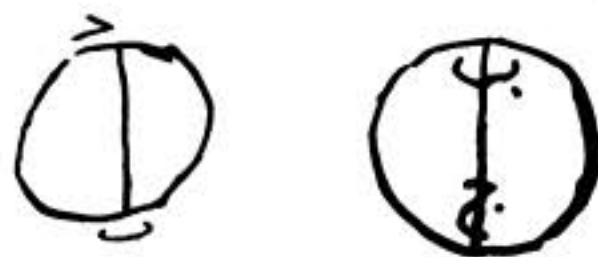


Fig. 87

Marsh

Huntington

وتسلخها من كل جهة وتمد شفتى الجلد بصنارة او بصنارتين او
بصنانير كثيرة إن احتجت الى ذلك كما قلنا فى أورام الرأس وتخرجها
15 قليلا قليلا وتكون على رقبة ألا تقطع عرقا او عصبا وليكن الموضع ليس
بحادث جدا لئلا تزيد يدك بالقطع او يقلق العليل فتقطع ما لا تحتاج

1. AH. خشنة. 2. ABHP. بودج.

thus hindered in your operating, apply powdered vitriol or some styptic powder to the wound, and bandage the wound and let be till the worst of the swelling has subsided and the opening is relaxed and threatens to turn purulent; for then the bleeding will stop.³ Then return to your operation and finish it. Then feel with your forefinger to see if there are any small glands left, in which case dissect and clean them away. If there is a large blood-vessel at the root of the gland, then you should not cut that gland at its root but should ligature it with a strong double ligature and leave it till it sloughs away of its own accord without harm. Then pack the wound with cotton wool previously soaked in Egyptian ointment; then continue dressing. If you excise the whole gland, you should at once draw together the two edges of the wound and suture them, when you are absolutely certain there is nothing of it left. But if you see that, on account of the size of the scrofula, there is still some superfluity left behind, you should carry the incision to the root and base of it, and employ suturing and the rest of the remedies mentioned. The glands that contain humidities you should open with a single perforation where they seem to have matured; make your perforation from below, as we have said. Then after opening use swabs soaked in Egyptian and similar ointments to do away with the unhealthy remains, till you see that the wound is clean; then dress with nourishing ointments until healed.

³ Gerard of Cremona's Latin version adds '. . . for it holds good for scrofula and for other swellings whether migrainous or other chronic diseases occurring elsewhere than the upper part of the neck, causing constriction; the patient should be purged with aloe and mastic pills to that extent that at length the patient gets dysentery; and then the dysentery is relieved with a confection of opium, honey, etc. . . .'

الى قطعه، فإن قطعت عرقا او شريانا وعاقك عن العمل فضع فسى
الجرح زاجا مسحوقا او بعض الذرورات التى تقطع الدم وشدّ الجرح
واتركه حتى تسكن حدة الورم ويسترخى الجرح ويهتّم بالتعفن فإنّ الدم
20 ينقطع حينئذ فارجع الى عملك حتى تفرغ، ثمّ تفتش بأصبعك السبابة
إن كان بقى ثمّ خنازير أخر صغار فتقطعها وتنقيها، فإن كان فسى
أصل الخنزيرة عرق عظيم فينبغى أن لا تقطع تلك الخنزيرة من أصلها
بل ينبغى أن تربطها بخيط مشى وثيق وتتركها حتى تسقط من
ذاتها من غير مضرة ثمّ تحشو الجرح بالقطن البالى وقد غمسته فسى
25 المرهم المصرى ثمّ تعالجه، وإن قطعت الخنزيرة كلّها فينبغى أن
تجمع شفتى الجرح وتخيطة من ساعته بعد أن تعلم أنّه لم تبق فضلة
البتّة فإن رأيت أنّه قد بقيت فضلة لعظم الخنزيرة فينبغى أن تقصد
بالقطع لأصلها وآسها³ وتستعمل الخياطة وما ذكرناه، وما كان من
الخنازير تحوى رطوبات فتبطنها بطّا بسيطا حيث يظهر لك موضع
30 نضجها واجعل البطّ ممّا يلى الأسفل كما قلنا ثمّ تستعمل بعد البطّ
القتل بالمرهم المصرى ونحوه لياكل ما بقى من الفساد حتى اذا رأيت
الجرح قد نقى فعالجه بالمراهم المنبتة للحم حتى يبرأ،

3. MV, om. cett. 4. M, أسفل البدن cett.

CHAPTER FORTY-THREE. On incising the larynx for a tumour arising in the throat.

The Ancients mentioned this laryngeal incision, but I have not seen anyone in our parts who has done it. Now here is the gist of what they say. Incision should be avoided in those suffering from quinsy, for they will not benefit from it, since all the passages and the lung will be diseased. But in those with an abscess in the mouth, throat, or tonsils, and when there is no disease in the windpipe itself, you must employ laryngotomy to avoid the mischief of suffocation. Now when we wish to undertake this we should incise the larynx under the third or fourth ring of the windpipe with a small incision transversely between two rings, so that the incision may be through the membrane, not the cartilage. This spot is suitable for incision, for it is deficient in flesh, and there are no blood-vessels near. If the practitioner be nervous, he must stretch the skin of the throat with a hook, then cut down through the skin till he reach the windpipe, and avoid blood-vessels if he see any. Then let him incise the membrane which we have spoken of. You can be certain of having opened the trachea by the emission of phlegm when it is pierced, and by the loss of voice. Then leave the wound open for some while. When the danger of suffocation is passed, bring the two lips of the wound together by the skin, which alone must be sutured, without the cartilage. Then use medicaments stimulating granulation till healed.

BOOK TWO. CHAPTER FORTY-THREE

This most important chapter on tracheotomy is taken, as to its detailed directions, from Paulus (vi. 33). According to Galen (*Medicus* 13) and Caelius Aurelianus (*Morb. Acut.* III. 4), who mentions it with disapproval, the actual operation was first carried out by Asclepiades of Bithynia in the second century B.C. It is not mentioned by Celsus, but is discussed by Antyllus whose directions seem to have been the source of Paulus' information. Aretaeus (*Morb. Acut.* 6) also mentions the operation but with disapproval. Although

Albucasis does not put forward any novel instrument for it, it is worth noting that he uses the ordinary hook to stretch the skin preparatory to making the incision; and this incision, which must be made at a carefully palpated-for site under the third or fourth ring of the trachea, is to be made with the ordinary scalpel (*mibda'*). Bearing in mind the probability of disputes having occurred over the propriety of the operation, the short excerpt at the end from Albucasis' own clinical notes is of interest and practical value.

الفصل الثالث والأربعون فى شق الحنجرة عن ورم يحدث فى داخل الحلق

ذكرت الأوائل هذا الشق فى الحنجرة ولم أشاهد أحدا فى
بلدنا صنعه وهذا نسق¹ كلامهم، أما أصحاب الذبحة فينبغى أن
5 يجتنبوا شق الحنجرة إذ لا ينتفعون بذلك من أجل أن جميع الأوراد
والرئة² تكون سقيمة، وأما الذين بهم ورم حار فى الفم أو الحلق أو
اللوزتين إذا لم تكن علة فى القصبة فوجب³ استعمال شق الحنجرة
للهرب من العطب الذى يكون من الاختناق، فينبغى إذا أردنا
ذلك أن نشق الحنجرة تحت ثلاث دوائر من دوائر القصبة أو أربع
10 شقا صغيرا بالعرض فيما بين دائرتين بقدر ما يكون الشق فى الصفاق
لا فى الغضروف وهذا الموضع موافق للشق لأنه عديم اللحم وأوعية الدم
منه بعيدة، فإن كان المعالج جباناً فينبغى أن يمدّ جلدة الحلق
بصنارة ثم يشق الجلد حتى إذا صار إلى القصبة جنباً⁴ أوعية الدم إن
رأى منها شيئاً ثم يشق الصفاق الذى وصفنا، ويستدل على شق
15 القصبة من البلغم الذى يخرج منها مع ما تنخرق⁵ ومن⁶ انقطاع الصوت
وتترك الجرح مفتوحاً زماناً فإذا زال⁷ الوقت الذى⁸ كان يتخوف⁸ فيه
الاختناق جمعت شفتى الجرح من الجلد وخطته وحده من غير
الغضروف ثم تستعمل الأدوية التى تثبت اللحم إلى أن يبرأ،

1. BHV¹, MV نص، A الشق، P عس، S فن. 2. H بالريه، M والريسه.
3. S، A توجب، P فلا يوجب، cett. 4. AH، حيث. 5.
6. HP. يحتوى، B، ثخين، V، حشر، M، يخثر، S، يخزن، A، محترق
من. 7. M. مؤمن. 8. M. حان. BMP.

The author of this book says, the interpretation of this account that we have given is this: when they see that one of the tumours that they mention has obstructed the patient's throat and he is approaching death and is anxious himself to be incised, they resort to laryngotomy so that the patient may breathe somewhat through the wound and his life be saved. They bid leaving the wound open till the worst of the disease abates; its height will last about three days; then they bid sew up the wound and dress till healed.

My own experience was this: a slave-girl seized a knife and buried it in her throat and cut part of the trachea; and I was called to attend her. I found her bellowing like a sacrifice that has had its throat cut. So I laid the wound bare and found that only a little haemorrhage had come from it; and I assured myself that neither the jugular vein nor an artery had been cut, but air passed out through the wound. So I hurriedly sutured the wound and dressed it until healed. And no ill befell the maid except for a hoarseness in the voice, but nothing more; and after some days she was restored to the best of health. Hence we may say that laryngotomy is not dangerous.

قال واضع هذا الكتاب، تفسير جملة هذا الكلام الذى حكيناه
 20 إنما هو اذا رأوا العليل قد سدّ حلقه أحد هذه الأورام التى ذكروا
 وأشرف العليل على الموت وهمّ نفسه أن ينقطع ذهبوا الى شقّ
 الحنجرة ليتنفس العليل على موضع الجرح بعض التنفس ويسلم من
 الموت وإنما⁹ أمروا بترك الجرح مفتوحا حتى تتقضى سورة المرض وتكون
 سورته ثلاثة أيام ونحوها فحينئذ أمروا بخياطة الجرح وعلاجه حتى
 25 يبرأ،

والذى شاهدته بنفسى أنّ خادما أخذت سكيناً فأرسلته على
 حلقها فقطعت به بعض قصبة الرئة فدعيت الى علاجها فوجدتها
 تخور كما تخور المذبوح¹⁰ فكشفت عن الجرح فوجدت الدم الذى خرج
 من الجرح يسيرا فأيقنت أنّها لم تقطع عرقا ولا وداجا والريح تخرج
 30 من الجرح فبدرت¹¹ فخطت الجرح وعالجته حتى برئ، ولم يعرض
 للخادم شيء إلا بحج فى الصوت لا مزيد وعادت بعد أيام الى أفضل
 أحوالها فمن هنا نقول إنّ شقّ الحنجرة لا خطر فيه،

الميت 10. cett. ولذا P, ولذلك S, وكذا H, ولذى M suspicor, 9.

H, om. P. فبادرت 11. P. من اشرف على الموت, MV.

CHAPTER FORTY-FOUR. On cutting down upon the tumour which occurs on the outside of the throat, and is called 'Elephant of the throat'.¹

This tumour which is called 'Elephant of the throat' is a large tumour of the colour of the body; it commonly occurs in women. It is of two kinds, congenital and acquired. As to the congenital, there is no treatment for it. The acquired is of two kinds: one resembles a sebaceous cyst, the other resembles the tumour arising from an arterial aneurysm, and it is dangerous to incise it, so on no account must you apply a knife to the latter kind, except any that are small; if you try and explore them with a probe and you find they are like sebaceous cysts and not adherent to any blood-vessel, then immediately cut down upon them as you would a cyst and remove them with whatever capsule may surround them, if they are contained within a capsule; and if not, dissect away the whole accurately; then treat the place with suitable remedies.

¹ This may mean goitre.

BOOK TWO. CHAPTER FORTY-FOUR

This chapter deals with disorders that are difficult to understand and is therefore out of the range of discussion.

الفصل الرابع والأربعون في الشق على الورم الذي يعرض في

الحلقوم من خارج ويسمى فيلة¹ الحلقوم

هذا الورم الذي يسمى فيلة² الحلقوم يكون ورما عظيما على لسان
البدن وهو في النساء³ كثير وهو على نوعين إما أن يكون طبيعيا وإما
5 أن يكون عرضيا ، فأما الطبيعى فلا حيلة فيه وإما العرضى فيكون
على ضربين أحدهما شبيه بالسلع الشحمية والضرب الآخر شبيه بالورم
الذي يكون من تعقد الشريان⁴ وفي شقه خطر⁵ فلا ينبغي أن تعرض
لها بالحديد البتة إلا ما كان منها صغيرا إن سبرتها وفتشتها
بالمدس فألفيتها تشبه السلعة الشحمية ولم تكن متعلقة بشئ من
10 العروق فشققها كما تشق على السلع وتخرجها بما يحويها من الكيس
إن كانت في كيس وإلا فاستقص جميعها ثم عالج الموضع بما ينبغي
من العلاج⁶،

1. om. HS. 2. HSA s. p. , قبله B, قبله P, قبله MV. 3. الصبيان

P. 4. M, وفي خطره V, وفي خطره V, cett. وفيه خطر V, 5. <الى ان يبرا> .

A. <يبرا> انشأ الله تعالى

CHAPTER FORTY-FIVE. On incision for various kinds of cyst.

There are various kinds of cyst. We have already mentioned all their varieties in the proper place. But we need here to set forth the difference between a cyst and an abscess,¹ for it is complicated. The abscess will be accompanied by heat and fever and fearsome pain, until the boiling-up of the superfluous matter settles down and the suppurating process is completed: then will the fever and intensity subside. But with a cyst there is neither heat nor fever nor pains, and a membranous capsule encloses it, its own particular covering. The cyst is flesh-coloured, and it begins like a pea and becomes like a melon, more or less; and is of two kinds: either fatty or containing humidity; and the colours of the humidities are several, as we mentioned in the appropriate section.

When you come to treat the cyst, you should first sound it and examine it with the instrument called the explorer, which is figured in the next chapter. The way to examine all tumours and cysts is to take this instrument and press it in at the spot where the tumour is softest, and revolve it gently with your fingers till you know you have pierced the skin; then press it in proportionately to the size of the tumour. Then remove the explorer and see what comes out after it. If a humidity should flow, whatever the colour, make a simple incision, as I said for the other tumours. But if no humidity come out along the track of the explorer you know at once that it is fatty. Therefore make a cruciform incision upon it in this shape, as I have told you,² and attach hooks and dissect away the skin gently from all sides. Be careful with the capsule; if you can, get it out whole, together with the

¹ We generally render سِلْعَة by 'cyst' and خُرَاج by 'abscess' or 'boil', while وَرَم is 'tumour' or 'swelling' and ورم حار ('hot swelling') 'abscess' or 'effusion'.

² M omits 'in this shape' and the figure. The other MSS. show fig. 86, except H which shows fig. 85.

BOOK TWO. CHAPTER FORTY-FIVE

The growths of which the author speaks seem likely to be what we often call sebaceous cysts. Treatment is set out along lines that in the main follow the ancient authors, Celsus (vii. 6), Paulus (vi. 36), etc. Albucasis, however, brings forward one original suggestion, with an appropriate instrument—*al-midass*—i.e. 'the explorer'. This seems to have differed from the true probe in being

sufficiently sharp-pointed to pierce the skin and covering of the tumour. We should describe it now as an exploring needle. It was to be plunged into the tumour and the operator was to watch what came out after it, as well as to feel the consistency of the tissues or matter that the needle met with in its passage.

الفصل الخامس والأربعون في الشئ على أنواع السلع

السلع أنواعها كثيرة وقد ذكرت جميع أنواعها في التقسيم وينبغي أن نخبر ههنا الفرق بين السلعة والخراج إذ هو مشكل، فأقول إن الخراج يكون معه حرارة وحمى وأرجاع مخوفة² حتى يهدأ غليان الفضل⁵ ويكمل العفن فحينئذ تسكن الحمى والحدة، والسلعة لا تكون معها لا حرارة ولا حمى ولا أرجاع ويحويها كيس صفاقي هو لها ظسرف خاص ويكون على لون البدن ويكون ابتداؤها كالحصّة وتصير كالبطيخة وأكبر وأصغر وهي على نوعين إمّا شحميّة وإمّا أنبها تحوى رطوبة والوان الرطوبة تكون كثيرة على ما ذكرت في التقسيم،

¹⁰ فينبغي إذا صرت الى علاج السلعة أن تسبرها وتفتشها أولاً بالآلة التي تسمى المدس على ما تأتي صورتها في الباب الذي بعد هذا، وصفة تفتيش الأورام والسلع كلها أن تأخذ هذه الآلة وتدسها في أرطب مكان تجده في الورم وأنت تدبر أصبعيك بها قليلا قليلا حتى تعلم أن الآلة قد أنفذت الجلد ثم أضع يدك على قدر عظم الورم، ثم أخرج المدس وانظر الى ما يخرج في اثره فإن خرج

¹⁵ رطوبة سيّالة آتى لون كانت فشقا شقا بسيطا على ما ذكرت في سائر الأورام وإن لم يخرج في اثر المدس رطوبة فاعلم أنها شحميّة فشاق عليها شقا صلبا على هذه الصورة كما أعلمتك، وعلقها بالصنانسير واسلخ الجلد من كل جهة برفق وتحفظ بالكيس إن استطعت على

V, محتره A, محسوه P, محرقه B, محترقه HS, 2. cett. بالفروق MV, 1.
M. محله

cyst. But if the capsule is torn in the course of the operation, and you cannot get it out whole, which frequently happens, remove it bit by bit until there is none of it left. For if a part of it is left behind, either great or small, the cyst will generally return. If it defeats you and some little piece of it remain, pack the wound, when you have done all you can, with some caustic powder and bandage it and put on it something to ease the inflamed tumour, and treat in the usual way until healed. If the tumour be large, sew the edges of the incision together and treat with stimulants. If you should come across a blood-vessel, pulsating or not, and there be haemorrhage, hasten to pack it with pounded vitriol; and leave bandaged for two or three days until the wound becomes purulent and the boiling-up of the blood is allayed; then resume cutting open the rest of the cyst.

20 ذلك أن تخرجه صحيحا مع السلعة، فإن انخرق الكيس عند العمل ولم
تستطع إخراجه صحيحا فكثيرا ما يعرض ذلك فأخرجه قطعاً قطعاً حتى
لا يبقى منه شيء فإنه إن بقى منه شيء قل أو كثر عادت السلعة
على الأمر الأكثر، فإن غلبك وبقى منه اليسير فاحش الجرح عند فراغك
ببعض الذرورات الأكلالة الحادة وشد الجرح وضع من فوقه ما يسكن
25 الورم الحارّ وعالجه بسائر العلاج حتى يبرأ، فإن كانت السلعة كبيرة
فخط شفتيها وعالجها بما يلحم، فإن اعترضك عرق ضارب أو غير
ضارب وعرض نزع الدم فبادر فاحش الموضع بالزاج المسحوق واتركه
مشدوداً يومين أو ثلاثة حتى يتعفن الجرح ويسكن غليان الدم ثم
ترجع إلى قطع ما بقى من السلعة،

CHAPTER FORTY-SIX. On the shapes of the instruments used for incising and perforating.

Among these are the various explorers.¹ There are three varieties of this instrument, large, medium, and small.

This is the figure of the large explorer (fig. 88).

Figure of the medium explorer (fig. 89).

Figure of the small explorer (fig. 90).²

They should all be made of the best Damascene steel, with quadrangular points, and strong, to assist entry into the tumours.

And this is the shape of the probes; they are also called *burud*.³

There are three kinds of this, too: large, medium, and small.

Figure of the large probe (fig. 91).

¹ This seems something like a trocar.

² M shows large and medium only, saying 'the medium will be a little finer, and the small finer yet'. There are numerous differences among the MSS. in this chapter, as to the order and the number of varieties of instrument. We have confined ourselves in the main to the text of H.

³ Lit. 'couriers'. The statement in AHMV, that the singular is *barid*, looks like a gloss.

BOOK TWO. CHAPTER FORTY-SIX

This important chapter gives a great number of illustrations of the commoner instruments in use among the Arabs at the time and referred to in very many chapters throughout the present work. Among these, probes, knives, and hooks are perhaps the most common, and should now be discussed. It has already been noted that Albucasis was not following any extant classical author in the description and application of these instruments in connection with cysts or tumours.

Exploring instruments are described under four names.

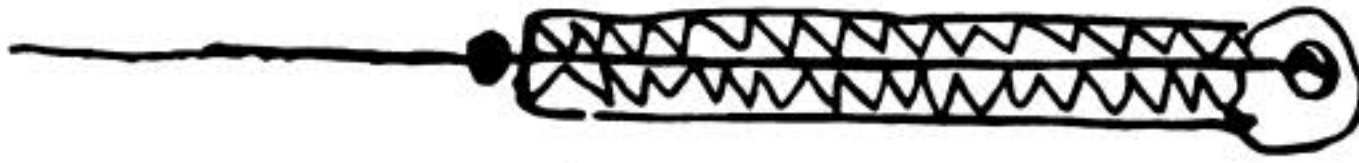
(i) *midass*—مِدَاس. This we have already redesignated an exploring needle; it is shown first in three sizes (MS. Marsh gives only two), in figures 88–90. The word is a 'noun of instrument' from *dassa*, to feel for or palpate. The drawings show needles on handles; the extremity of each, in the Huntington drawings, being supplied with a quadrangular point. As already surmised, they were probably employed as fine trocars; for dealing

with sebaceous cysts in chapter 41; in chapter 44 for exploring a cystic goitre; in chapter 45 for exploring an inflammatory swelling or boil; and in chapter 62 for sampling the fluid in a hydrocele.

(ii) *barid*—بَرِيد—probe. This instrument is shown in three sizes in this chapter but by the Huntington MS. only (figs. 91–3). The word is used earlier, in chapter 23 to describe a special scalpel—*al-mibda' al-barid*—for making an opening into the cornea in certain cases of so-called cataract. Here the instrument closely resembles *al-midass* but has no handle properly speaking; this suggests that it could be plunged into a sinus right up to the hilt, whereas *al-midass* would only do for superficial exploration. The little eye-hole in each must have been to take a thread, such as would be used in treating an anal fistula (see chapter 80). The text, however, shows that *al-midass* was the equivalent of the *misbār*, a still commoner word for a probe; reading thus: 'this is the shape of the probe (*misbār*); they are also called *burud*' (pl. of *barid*).

الفصل السادس والأربعون في صور الآلات التي تتصرف في الشق
والبط

منها صور المدشّات وهي ثلاثة أنواع منها كبار ومنها أوساط ومنها
صغار، صورة مدش كبير:



Marsh



Huntington

Fig. 88

5 صورة مدش وسط:



Marsh



Huntington

Fig. 89

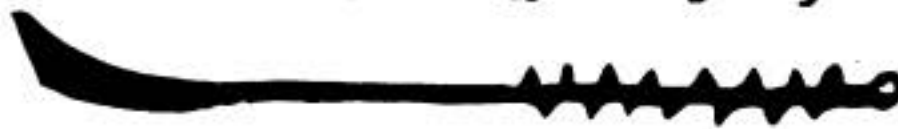
صورة مدش صغير:



Huntington

Fig. 90

تصنع من الحديد الفولاذ مربعة الأطراف محكمة لتسرع الدخول
في الأورام، وهذه صور المسابير وتسقى البرد، وهي ثلاثة أنواع
أيضا كبار وأوساط وصغار، صورة مسبار كبير:



Huntington

Fig. 91

1. <واحد برید> V, <احدها برید> HM, <واحد برید> A.

Figure of the medium probe (fig. 92).
Figure of the small probe (fig. 93).¹

They are suitable for exploring tumours, wounds, fistulas, and sinuses, to see what is inside them such as bones, etc. They are made round, polished, and smooth, like packing-needles, of Chinese copper or of white copper, or of brass, silver, or iron. The best are those made of white copper. Sometimes probes are made of black lead, for investigating fistulas whose deeper course is devious; so that by reason of their softness they can adapt themselves to the curves. Of these, too, there are three varieties: the long, the medium, and the short, proportioned to the requirement of the depth of every fistula. Their thickness also should be proportioned to the width or narrowness of the fistula.

The large lead probe (fig. 94).
The medium lead probe (fig. 95).
The small lead probe (fig. 96).²

¹ M gives only one figure: 'figure of the large probe'. H shows three.
² M omits all three figures.

(iii) **مسبار**—*misbār*—probe or explorer. This is the commonest word for any exploring instrument; it is used for the pointed iron probe figured above (91-3); and a little further on for the leaden probe; this, in the Huntington MS. only, is illustrated in three sizes (figs. 94-6); and was evidently a plain long thin flexible explorer without a pointed extremity. Its pliability was an essential element for exploring sinuous passages. The word is also used of an instrument for opening an imperforate anus (chapter 79); and in chapter 80 for the wound-probe for exploring fistulae; and another variety is described in the same passage, with a sharp point, for opening up a fistula.

Further on in the same chapter a third variety is described, with drawing (fig. 152) with an eye in the head—as opposed to the eye in the tail in those of chapter 46—with which a thread might be carried to and through the depths of a fistula. In chapter 86 the same word is used in connection with the treatment of discharges and fistulae; and again two varieties are distinguished, the

iron or bronze, straight and stiff; and the pliable leaden probe. The same word also occurs in the description of a clinical case. In chapter 90 a *misbār* is used for lifting a thrombosed varicose vein for excision; in chapter 94 it is used for palpating for a buried arrow-head. In Book III, chapter 2, it is given for investigating a fracture of the skull; and in chapter 19 for probing a compound fracture for loose fragments of bone.

(iv) **مروء**—*mirwad*—meaning a rod or small stick, but used much in the sense of a probe. It seems to be a word that could be used where the previous three would be inappropriate. A small, straight, blunt probe, in chapters 11, 14, and 15, it is employed in dealing with the eyelids, relaxed, inverted, or adherent. In chapter 30 it is used to force a filling into a decayed tooth. In chapter 67 it enters into the mode of reducing an inguinal hernia. The word is also used in chapters 83 and 94 as descriptive of the extremity of the sinus-syringe, and of the 'thruster' for getting out arrows stuck in soft parts; in chapter 90 it is slipped beneath



Fig. 92

Huntington



Fig. 93

Huntington

تصلح ليفتش بها الأورام والجراحات والنواصير والمخابي عن ما
داخلها من العظام وغير ذلك تصنع مدورة مضقولة ملساء كالمسلات
من² نحاس صينى² او اسبادروية³ او من نحاس او من حديد او من فضة
وأفضلها ما صنعت من الاسبادروية، وقد تصنع مسابير أيضا من
الرصاص الأسود وتصلح ليسبر بها النواصير التي يكون فى غورها
تعويج لتنعطف بلينها مع ذلك التعويج وهى أيضا ثلاثة أنواع لأن
منها طوال ومنها أوساط ومنها قصار على قدر ما يحتاج اليه غور
كل ناصور ويجعل غلظها على قدر سعة الناصور وضيقه، صورة مسبار
من رصاص كبير: 20

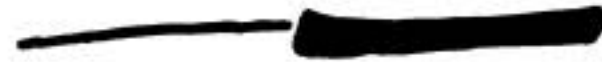


Fig. 94

Huntington



Fig. 95

Huntington



Fig. 96

Huntington

A. الاساء ردية B, اسادورة MV اسبادريه 3. A. حسى 2.

Figures of hooks. There are many kinds of hook. For example, there are the simple hooks, that is, having only one prong; there are three kinds of this: large, medium, and small. There are also the blind hooks, of which there are three kinds. And there are the hooks provided with two prongs, of which there are three kinds. And there are the bent hooks with two prongs, of which there are three kinds. And there are the hooks provided with three prongs, of which there are three kinds. All of these kinds are necessary in their place.

The large, medium, and small simple hook (figs. 97, 98, 99).¹

The large and medium blind hooks (figs. 100, 101). The small blind hook (fig. 102).²

¹ Again M omits all three.

² M gives only figs. 100, 103, and 106; i.e. the large examples, and says 'This is the figure of the various types of large hook. The medium will be smaller, and the small will be more slender.'

a varix prior to its excision; in chapter 89 it is for raising the nail in treating paronychia.

As a sound it comes in chapter 61 on stone in the female; used, after the incision is made, to sound for the calculus. Again a similar instrument, too blunt to be called a knife or stilette, is to be used in palpating and perforating an obstruction in the female pudenda (chapter 72); and in chapter 74 to explore the uterus prior to introducing a speculum; and in chapter 91 for opening up the track of a guinea-worm.

A spoon-probe is described, with the same word, in chapter 37: Figure 80 shows it as a probe with a spoon-shaped extremity for the application of caustic to the uvula.

A hook probe is illustrated in chapter 38 (fig. 82) as a long, slender (though the text states that it was thicker than a probe), leaden instrument with a hooked extremity which the surgeon could adjust to the patient's gullet for fetching up a foreign body stuck in it.

When we try to make Albucasis correspond with what we know of classical probes we meet with some difficulties. The plain probe, *μήλη* or *specillum*, seems to correspond with the *mirwad*. It was an instrument of great antiquity, being even ascribed to Asklepios; but unlike the Arabic type it was probably provided with an olivary extremity;

for Galen speaks of *ὁ πῦρην τῆς μήλης*—'the olive (i.e. olivary point) of the probe'.

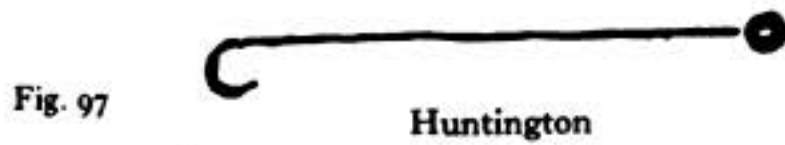
The eyed probe of the Ancients—*μήλη ἐπ' ἄκρου τετρημένη*—would correspond with that described in chapter 80 as a special form of *misbār* (see para. iii, above, and fig. 152) resembling a shoemaker's needle. Or it might perhaps as well be the same as that called *al-barīd* which has the hole in the butt end, according to the Huntington drawings. Both classical and Arabian examples were for passing threads through fistulae.

The spoon probe is the classical *μηλωτρὶς* or *specillum auricularium*; it is plain one end, had a small spoon at the other, and was primarily an ear-scoop. The only instrument in Arabian surgery at all corresponding with this is the special *mirwad* with a scoop end for applying caustic; no such instrument is given for the removal of a foreign body from the ear (compare chapter 6).

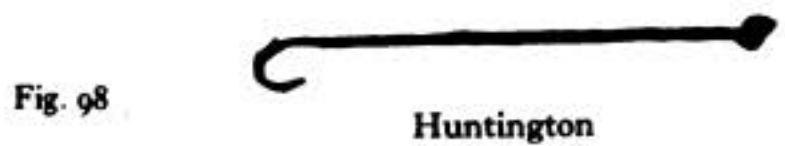
The classical *σπαθομήλη* or *spathomela*, which is the same as the *στρογγύλη μήλη* of Galen, may possibly be the instrument in the author's mind when he speaks of opening the imperforate hymen with a *mirwad*; for Aetius refers to it as blunt dissector in a like case (iv. 4, 96). The bladder sound which, as we have seen (para. numbered iv, above), was recommended by Albucasis as a means of locating a calculus in the bladder after

صور الصنائير وهى أنواع كثيرة لأن منها بسيطة أغنى التى لها
مخفاف واحد وهى ثلاثة أنواع كبار وأوساط وصغار ومنها الصنائير
العميان وهى ثلاثة أنواع ومنها الصنائير ذات المخفافين وهى ثلاثة 25
أنواع ومنها الصنائير المعوجة ذات المخفافين وهى ثلاثة أنواع ومنها
الصنائير ذات الثلاثة مخاطيف وهى ثلاثة أنواع وجميع هذه الأنواع
يحتاج كل واحد منها فى موضعه،

صورة صنارة بسيطة كبيرة:



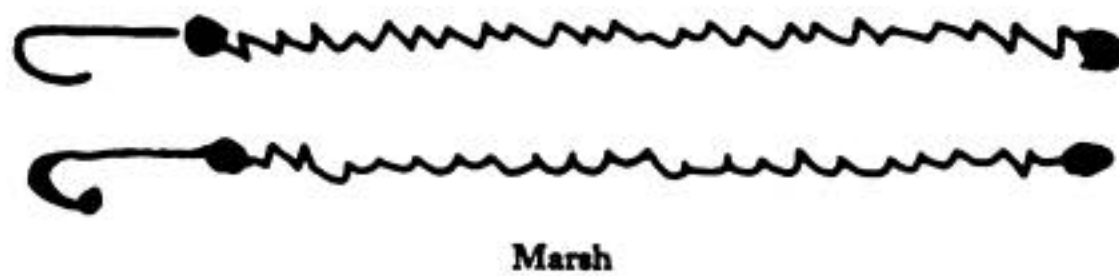
صورة صنارة بسيطة وسط:



صورة صنارة بسيطة صغيرة:



صورة صنارة عمياء كبيرة:



صورة صنارة عمياء وسط:



The large, medium, and small, double-pronged hooks (figs. 103, 104, 105).¹

The large triple-pronged hook (fig. 106). The medium, and small triple-pronged hooks (figs. 107, 108).¹

¹ See note 2 page 350.

a lithotomy incision had been made in the female case, seems to have no corresponding mention in extant Greek and Latin texts; so here the Arab surgeons seem to have made a contribution to genito-urinary surgery.

The classical *τραυματική μήλη* or wound probe seems to be the same as the *misbār* for exploring wounds of chapter 80, but no special word is used for it.

For the rest, a number of other specific names for different probes and exploring instruments are found scattered throughout the classical writings, which find no counterpart in the comparatively narrow compass of the present work; but it seems clear that, without giving their instruments such a varied nomenclature, the Arab surgeons had, and knew the use of, most of the different exploring instruments of the Ancients.

Hooks. Here there is naturally much less room or need for variety. Only one word: *منارة*—*ṣinnāra*—is used for every variety mentioned; and it occurs almost chapter by chapter throughout. The fact is that the hook was generally used where nowadays the operator uses a pair of forceps for picking up and holding tissues.

The simple hook is shown in several forms in this chapter (46). The actual extremity of the hook was pointed to hold the flesh or skin. It might be a single-hooked instrument as seen in figures 97-9; or it might be a double hook (figs. 100-5) or triple hooked (figs. 106-8). These simple hooks were undoubtedly the type referred to by Albucasis in most cases; as, for example, in this chapter for the opening up of an inflammatory swelling; for catching hold of warts (chapter 8) or a ranula (chapter 35), or stretching the skin over the windpipe preparatory to a tracheotomy (chapter 43), extracting a dead foetus (chapter 76), or the excision of haemorrhoids (chapter 81), to mention some examples.

The guarded hook is an important variety. It seems from the drawings in this chapter (figs. 100-2) to have been the same as the last but with an olivary extremity. The most interesting specific instance of it and its use is in the case of the triple guarded hook for raising the eyelid in chapter 11, and to be regarded almost as a kind of speculum. (See fig. 51).

The dental hook or elevator also needs special mention, not because its design differed greatly from the rest, but because it was constructed on particularly stout lines with a very strong point so that fragments of tooth could be forcibly wrenched out of the jaw. (See fig. 72.)

The guarded hook for the extraction of varices is also worth special mention. The actual design (fig. 177 in chapter 90) differs little except in size from the blunt hooks of this chapter 46; it is most likely the same as the *κισουλκός* of the Greeks.

The crotchet or obstetrical hook is well shown in chapter 77. The first, figure 147, shown in both MSS., is a plain stout hook with a rather narrow curve; the text leaves one in doubt whether the inner edge was sharpened in the manner of the true crotchet; for chapter 76 does no more than hint at the possibility of the dead foetus being removed after being fragmented with this instrument. The third type of obstetric hook (fig. 148) is equally stout and is a double variety, but differs from those already mentioned in having the hook ends curving away from one another; how this was employed is not clear.

Arabian hooks are in line with those of the Ancients. The plain sharp hook is the same as the *hamulus acutus* or *hamus acutus* which is described by Celsus (VII. 7) in the treatment of pterygium; and also the *ἀγκιστρον* of the Greek writers (see Paulus, VI. 30 on tonsillectomy). Then the blunt hook corresponds with the *τυφλάγκιστρον* or *hamus*

صورة صنارة عمياء صغيرة :



Fig. 102

Huntington

صورة صنارة كبيرة ذات المخطافين :

35

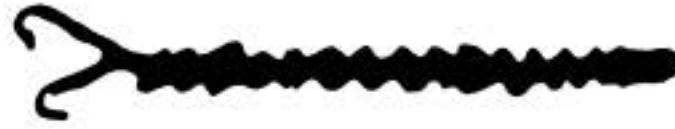


Fig. 103

Huntington



Marsh

صورة صنارة وسط ذات المخطافين :



Fig. 104

Huntington

صورة صنارة صغيرة ذات المخطافين :



Fig. 105

Huntington

صورة صنارة كبيرة ذات الثلاثة مخاطيف :

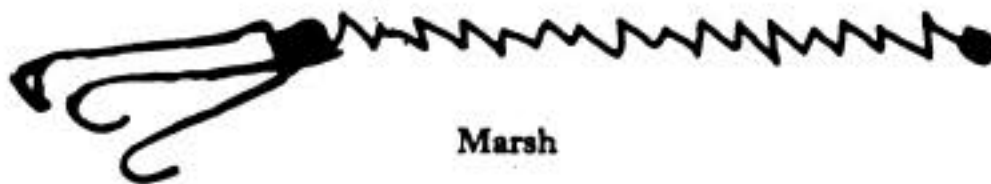
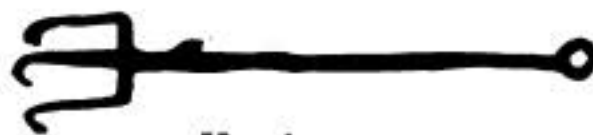


Fig. 106

Marsh



Huntington

These are the figures of the scarifying scalpels with which you incise and dissect away cysts and tumours. They too are of three kinds: large, medium, and small. Figure of the large scarifying scalpel (fig. 109). Figure of the medium scarifying scalpel (fig. 110).¹ Figure of the small scarifying scalpel (fig. 111).¹ The cutting edges should be sharp, and the other ends blunt. The reason for making them like this is so that they can be utilized in dissecting away cysts where there is a fear of cutting a vein or nerve, and also

¹ M omits the medium and small.

retusus, which, according to Aetius, should be used in operating for symblepharon or operating on blood-vessels. Other parallels could be given; and the extreme commonness of the use of the hook in earlier times is shown by the fact that there are more than forty examples of the surgical hook in the Naples Museum alone. The crotchet must have been the same as the classical *εμβρυουλκός*; and the *λιθουλκός* of the Ancients is found in chapter 60.

Knives. Albucasis takes pains to describe a great number of surgical knives with numerous illustrations throughout the book. This chapter mentions several and so makes a convenient point at which to review the subject. The chief difficulty in attempting a classification is the laxity of expression in the Arabic. Several words are employed but less specifically than in the Greek, and seem to mean little more than the *snid-isen* (lancet) of the *Anglo-Saxon Leech Book*. Albucasis also sometimes uses the simple expression *ḥadid*—iron, as in chapters 51, 62, and 67 as a general term for operative, as opposed to medical or drug, treatment. The razor, though not of true operative importance, very commonly entered into the scheme of ancient surgery since the shaving of the hair and beard was regarded as a preliminary or even integral part of the treatment. Oribasius wrote a chapter *περὶ κουράς καὶ ξυρήσεως* (x. 15). A minor operation such as circumcision might be carried out by the barber with his razor.

Chapter 46 refers to surgical knives by three terms, in the order of their occurrence: *mishrat*, *mikhda*, and *mibda*. The general course of the book makes it manifest that the common word denoting a surgical knife is

mibda, which should be therefore considered first.

مبضع—*mibda*—is used by Albucasis throughout Book II and denotes practically any kind of surgical cutting instrument. The variety of uses and the numerous shapes and sizes illustrative of the *mibda* leads to the following suggested broad distinction of three main types: (a) mainly cutting; (b) mainly piercing; (c) having both an edge and a sharp point.

(a) The cutting *mibda* is first mentioned in Book I, chapter 3, for making an opening to insert the clove in the treatment of migraine. A good drawing of it would first be seen in the straight square-ended knife for operating on hydrocephalus (Book II, chapter 1) (Fig. 39); also for the extraction of the temporal arteries in migraine (fig. 42); then a double-edged variety is given in chapter 4 for the operation of *periscythismus* for chronic lachrymation (fig. 44). The *mibda* further appears in chapters 11 and 14 for relaxed and inverted eyelid; and in chapter 15 for separating an adhesion of the lid to the cornea. In chapter 16 figure 55 shows a 'smooth-tipped scalpel' and figure 56 a 'fine smooth' one, both for scraping away pterygium. These correspond with the *περυγοτόμος* of the Ancients. Chapters 21 and 22 describe a fine scalpel for staphyloma and hypopyon; chapter 23 speaks of the fine knife used for cataract as 'the *mibda*' which is called *al-barid*. This word *barid* is, of course, the same as that for a probe. Another fine scalpel is given in chapter 24 for the excision of nasal polypi. The *mibda* was used for laying bare a tooth ready for extraction (chapter 30) and for incising a ranula (chapter 35); and, with a figure (fig. 79), in chapter 36

صورة صنارة وسط ذات الثلاثة مخاطيف:

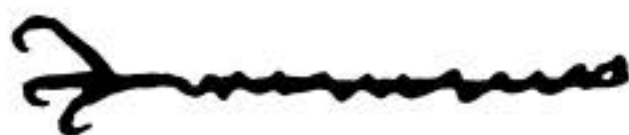


Fig. 107

Huntington

صورة صنارة صغيرة ذات الثلاثة مخاطيف:

40

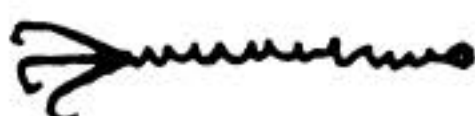


Fig. 108

Huntington

وهذه صور العشارط التي تشق وتسلخ بها السلع والأورام وهي
ثلاثة أنواع لأن منها كبار ومنها متوسطة ومنها صغار ، صورة مشرط
كبير:



Fig. 109

Huntington

صورة مشرط متوسط:



Fig. 110

Huntington

صورة مشرط صغير:

45



Fig. 111

Huntington

تكون أشغارها التي يشق بها محدودة والأطراف الأخر غير
محدودة وإنما جعلت كذلك ليستعان بها في سلخ السلعة عند خوف

that the patient may console himself thereby and find some small relief from the pain involved in the dissection of a tumour.

Here are the figures of the 'deceivers' of which also there are three kinds, large, medium, and small (figs. 112, 113, 114).¹ They are made of brass and resemble the rod for instilling eye-salve. At one end there is the likeness of a broad spoon made of two plates, in the extremity of which is the point of a hidden scalpel; thus the knife is masked like a bird's tongue, moving in and out at will, as you see.²

Figures of the scalpels which are hidden between the fingers when

¹ Again M shows the large example only (fig. 112).

² M reads 'In the broad end is the scalpel blade, hidden therein, moving in and out when you wish, as you see.'

for tonsillectomy. Another is mentioned in chapter 42 for incising scrofulous tumours. Many later chapters continue the mention of the *mibda'*, the following with figures: to incise an imperforate urinary meatus (chapter 55, fig. 130); a sharp-pointed one for laying open fistulae (chapter 80, fig. 153); another for performing a laparotomy (chapter 85, fig. 158), a scalpel for opening up a wounded abdomen for the purpose of repositioning the organs; a 'myrtle-leaf' scalpel shown (fig. 182) and an olivary scalpel (fig. 183) both in chapter 95. Beside these other special shapes are mentioned without illustrations: a 'flat-nosed' scalpel for scraping away a preputial adhesion (chapter 56); another myrtle-leaf scalpel for the removal of a growth obstructing the female pudenda (chapter 72). The above-mentioned knives are generally speaking true cutting instruments.

A pointed *mibda'* for piercing only, without an edge, is given in chapter 7; another is shown in chapter 54 for opening the abdomen in ascites (fig. 127); and an assortment of pointed blades, seemingly designed to be held between the fingers, is shown in figures 149-50 for opening the impacted head of a hydrocephalic foetus (chapter 77).

Knives for transfixing, with both point and edge, appear in this chapter (46); thin handleless blades to be held between the fingers, rather as those referred to already (chapter 77), for opening boils; and perhaps the sharp-pointed knife for laying open

fistulae (chapter 80, fig. 153) belongs to this class; and *al-fa's* (see note below) is probably similar.

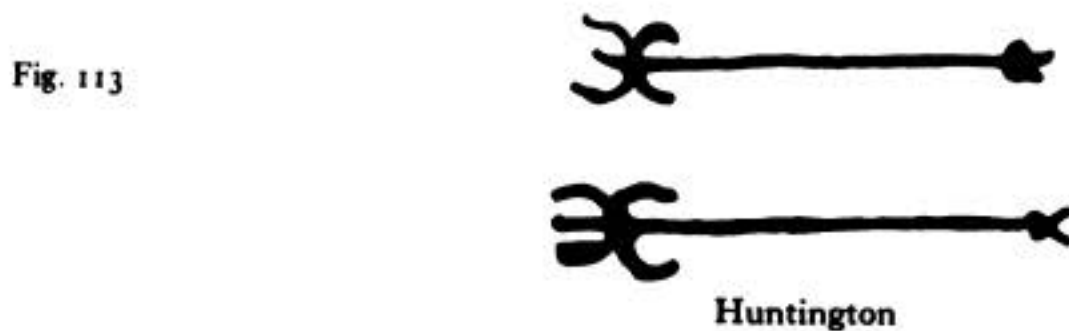
مشرط—*mishrat*—translated by Channing as *scarificator*—is a word that, strangely enough, is found in this chapter (46) only. The illustrations in the Huntington MS. (figs. 109-11) show three sizes of a plain rectangular blade; the corresponding Marsh figure depicts a similar blade on a long handle (fig. 109A). There is no clear reason why the Huntington examples should not also have handles; the figures may perhaps represent the outer case of a folding knife, such as is described and illustrated by Paré (xvi. 61). But it hardly seems likely that such a device would have been passed over in silence by Albucasis. The appearance and description make clear that this *mishrat* was a cutting instrument for dissecting away tumours, etc.

مخدع—*mikhda'*—is the word used in describing some very curious knives illustrated in figures 112-14. Its literal meaning is 'instrument for deceiving'. The Huntington sketches are puzzling; but may be a crude attempt to depict the blade between the two 'plates' referred to in the text. The Marsh drawing helps more (fig. 112); taken with the description, there is presented an instrument which, at the end of the handle, has what seems to be a double spoon-shaped contrivance, something like a tea-infuser, but of course lacking the perforations of the domestic article. Then between the two bowls of

قطع عرق او عصب وليتآنس⁴ بها العليل ويجد الراحة قليلا من الحرقه
 التى يجدها عند سلخ الورم
 50 وهذه صور المخادع⁵ وهى ثلاثة أنواع لأن منها كبارا ومنها أوساطا
 ومنها صفارا، صورة مخدع كبير:



صورة مخدع متوسط:



صورة مخدع صغير:



تصنع من نحاس شبه المرود الذى يكتحل به وفى الطرف الواحد
 55 شبيهه ملعقة عريضة من طبقتين تكون فى رأسها شفرة الموضع مخفية فيه
 تشبه لسان الطائر تجرى الى داخل وإلى خارج متى أحببت كما ترى،
 صور المباحض التى تستر بين الأصابع عند بظ الأورام لا يشعر

4. وليتونس HMA s.p., 5. المجاريد P. وليتولس V, ولونس P.

tumours are to be opened, so that they are not noticed by the patient. They are of three varieties: large, medium, and small (figs. 115, 116, 117).¹

Figures of the cupping vessels with which haemorrhage is stanchd. There are three kinds: large, medium (figs. 118, 119), and small (fig. 120).²

¹ M shows only the large (fig. 115), as does P.

² M shows only the large (fig. 118).

this there ran a blade that could be protruded or withdrawn at will. This blade would be the part marked (a) in the diagram:



It seems likely that this was a form of hidden knife used for the transfixing of an abscess in the case of a nervous patient; the same effect would be obtained by hiding the thin *mibda'* shown by the immediately succeeding drawings (figs. 115-17) between the fingers, as described in the text. The idea of concealing the blade in this ingenious way does not seem to have been described or practised by any of the Ancients; nor does it appear in later European writers; though Paré, copied by many later authors, shows a tiny blade on a finger-ring (vi. 10) for transfixing ulcers; but this device was also known to Albucasis and is found elsewhere described in this work (chapter 57).

Other forms of knife not referred to in this chapter may be mentioned here:

المبضع النشل—*al-mibda' al-nashl*. The word *nashl* was originally a domestic one denoting a kitchen skewer or hook for catching up meat. Here the word is used in apposition to *mibda'* and presumably conveys the sense of a transfixing knife such as has already been described. In chapter 60 it is shown (fig. 136) and described for opening up the bladder for stone; and another illustration is found in chapter 95 (fig. 184) where it is given for venesection of the temporal vessels for migraine, and of the antecubital veins. Chapters 10 and 11 also refer to it, without a figure, for hydatid of the eyelid and for entropion. There is nothing to show why this designation should also be used for what was essentially a phlebotome, in chapter 95. We generally render it 'lancet'.

المبضع السكينية—*al-mibda' al-sikiniya*.

The term *sikiniya* is used in Book I, chapter 4, on migraines, and elsewhere, of the bladed or edged cautery; and in Book II, chapter 36, the term is used to describe a tongue depressor, with figure 77 to show it. The word means a table-knife. Chapter 4 (fig. 45) shows it as a formidable knife for the undertaking called *periscythismus*. In chapter 95 it is again referred to, now as being similar to *al-nashl*; and it is doubtful if the following figure (182—myrtle leaf) belongs to it. The term seems to imply something rather coarse compared with the fine instrument brought to mind by the term phlebotome.

الفأس—*al-fa's*. This term, literally 'pick-axe', is unique to chapter 95 and seems to mean a phlebotome. See also Comment to chapter 95.

Other unusual forms of knife are noted here and there; and the term *mibda'* is always used except in the last. Of special interest are the lithotomy knife, further discussed at chapter 60; and the sickle-shaped knife for excision of the tonsils shown in chapter 36 (fig. 79). This tonsillotome, as we may call it, corresponds with the *ἀγκυλοτόμον* of Paulus (vi. 30, 2); who says there were two, one for each side, with opposite curvatures.

The general correspondence of Arabic knives with their classical counterparts is fairly clear. In the present work it is noticeable that the scribe of the Huntington MS. often illustrates a knife with a curved or billed cutting edge where the Marsh scribe shows one with a straight edge. This distinction is clearly seen, for example, in the illustrations to chapter 16; but at the same time it must be realized that it is a distinction that is not actually sustained by the text, and so was of no material importance to

بها المريض وهي ثلاثة أنواع لأنّ منها كبارا وأوساطا وصغارا ، صورة
مبضع كبير:



Fig. 115

Marsh

صورة مبضع متوسط: 60



Fig. 116

Marsh

صورة مبضع صغير:



Fig. 117

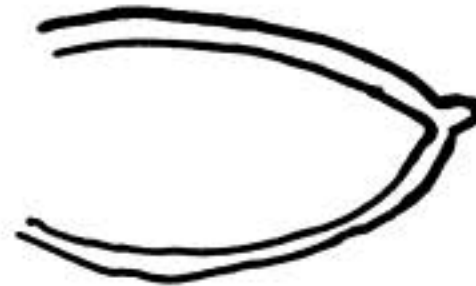
Marsh

صور المحاجم التي يقطع بها نرف الدم وهي ثلاثة أنواع لأنّ منها
كبارا وأوساطا وصغارا ، صورة المحجمة الكبيرة:



Fig. 118

Marsh



Huntington

صورة المحجمة المتوسطة:



Fig. 119

Huntington

They are made of bronze or of Chinese alloy, round but slightly elongated, as you see, and also rather thin. You should have these kinds by you, large and small, so that haemorrhage may be quickly stopped in an emergency and when you have no medicine. But they are not to be used for suppressing haemorrhage in all parts of the body, but only in the fleshy parts such as the calf and thigh muscles, the arm muscles, the breasts, belly, and groin, and other similar fleshy soft parts. Sometimes of this class small instruments, like nutshells, are made, like this (fig. 121). Haemorrhage from a venesection is stopped by these; or in the case of a cut artery or vein. Sometimes round ones are made, like this¹ (fig. 122).

¹ V adds 'like a tailor's thimble'.

the Arabian surgeons. Nevertheless, it is clear that the two types did exist; and they correspond with similar types among the Ancients. The straight knife was the *μαχαίριον*, the word commonly used by Hippocrates and originally meaning a small sword; that is, a straight cutting blade. Later Greek authors called it *σμίλη*, and the Romans *scalpellum* or *scalprum*; only occasionally the more specific *scalpellum rectum*. The bellied knife, when given a name distinct from the simple *σμίλη* or *scalpellum*—that is, in Arabic *mūḍa'*—was called *στηθοειδής μαχαίρις* for making an incision between the ribs for empyema. (See Hippocrates, *de Morb. Acut.* II. 47; Littré, VII. 71.) Galen, in his *Lexicon*, terms it *σμίλιον γαστρώδες*. The pointed transfixing varieties were doubtless the counterpart of the classical *όξύβελές* or pointed bistoury, used to plunge into and open an empyema cavity (see passage from Hippocrates quoted above); or of the *σπάθη όξεία* or *spatha acuta* of the Latin writers. It was certainly the same as the *σκολοπομαχαίριον* of Paulus (VI. 74, 3) for opening the abdomen for ascites, and the foetal head; since the descriptions correspond exactly as will be seen in the notes to chapters 54 and 77. A particular type of piercing instrument termed *κατιάς* is mentioned by Soranus (IV. 7, 8 in Ilberg's edn.) and Paulus (VI. 74, 3) for puncturing the membranes in labour. This procedure was certainly known to Albucasis but he recommends either a small *mūḍa'* or the use of the finger-nail (see chapter 75).

The crow-bill-shaped knife is well repre-

sented in the Arabic drawings; and, although no distinctive name is given to it, it agrees perfectly with the *corvus* of Celsus (VII. 19. 7, on the radical cure of hernia), and the *όξυκόρακον σμίλιον* of Paulus (VI. 87), and the *σμίλιον κοράκινον* of Oribasius.

The Arabic lancet *al-fa's* is the classical *φλεβοτόμον* and will be discussed later (chapter 95).

شفرة—shafra—was a general term for 'blade', which is why it could be used both for 'cobbler's knife' and, in Book II, chapter 55, for what must have been a small and delicate knife (not illustrated) for the treatment of an ectopic urinary meatus.

There are some classical instruments that seem to have no counterpart in Arabic terminology. Such are: the *σπάθιον συριγγοτόμον* of Paulus (VI. 88) for opening up a fistula (though of course the procedure is described by Albucasis with a knife for the purpose; see chapter 80); also the *πολυπικόν σπάθιον* (Paulus VI. 25, 2) for the excision of nasal polypi. It was, however, suggested by Rhodius (*Comment. in Scrib. Larg.* pp. 46, 53) that the *σπάθιον* or *spatha* was a kind of sword-blade, corresponding therefore with the two-edged *mūḍa'*. The terms *πτερυγοτόμον* and *σταφυλοτόμον* were applied to ordinary fine scalpels in virtue of their special use; such instruments were used by the Arab surgeons (see chapters 16, 21, etc.) without special names.

Cupping vessels are described and discussed in the last chapter.



Fig. 120

Huntington

تصنع من نحاس او من صينى⁶ مدوّرة الى الطول قليلا كما ترى
وتكون الى الرقّة، ينبغي أن تكون هذه الأنواع من المحاجم عندك
كبارا وصغارا لتقطع بها الدم بسرعة عند الضرورة وعند ما لا يحضرك
دواء ولكن لا تستعمل فى قطع الدم فى كلّ موضع من البدن وإنما
70 تستعمل فى المواضع اللحمية مثل عضل الساق والفخذ وعضل الذراع
والثدى والبطن والأربية ونحوها من الأعضاء اللحمية الرطبة، وقد تصنع
منها آلات آخر صغار تشبه قشور الفستق على هذه الصورة:



Fig. 121

Marsh

يقطع بها الدم اذا نزل من موضع الفصد او عند قطع عرق او
شريان وقد تصنع منها مدوّرة على هذه الصورة:⁷



Fig. 122

Marsh

Huntington

6. A. حسنى. 7. <مثل كشتبان الخياط>.

CHAPTER FORTY-SEVEN. On the treatment of the male breast when it resembles the female.

The breasts of some males may swell on attaining puberty so as to resemble the female breast, and they remain permanently swollen and ugly. If this is abhorrent, a semicircular incision should be made on the breast, like this figure (fig. 123), from *b* to *g*.¹ Then dissect away all the fatty tissue and pack the wound with a cicatrizing compound and sew the lips together and dress until healed. But if the breast is pendulous and flabby on account of its size, as happens with women, you should make two semicircular incisions on the upper side, the ends joining one another, in such wise that the longer incision encircles the other like this (fig. 125), from *b*

¹ H has an additional figure in the margin (fig. 124), drawn thinner, labelled 'this is instead of the broad shape'.

BOOK TWO. CHAPTER FORTY-SEVEN

This chapter on the treatment of the male breast is derived from Paulus (vi. 46). No special instrument is described; the nature of the operation is quite clear; the sketches of

the incisions employed are of great interest as it is an early and genuine attempt to add an operative element to this text-book.

الفصل السابع والأربعون في علاج ثدى الرجال الذى تشبه ثدى النساء

قد ينتفخ ثدى بعض الناس عند مبلغ اللحم حتى يشبه ثدى النساء فيبقى "وارما قبيحا" فمن كره ذلك فينبغى أن يشق على الثدى بشق هلالى على هذا الشكل من خط ب الى خط ج:



Fig. 123

Huntington



Marsh

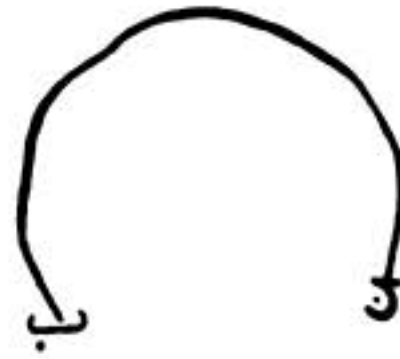


Fig. 124

Huntington
(margin)

ثم اسلخ الشحم كله ثم املا الجرح من الدواء المطعم ثم اجمع شفتى الجرح بالخياطة وعالجه حتى يبرأ، فإن مال الثدى الى أسفل واسترخى لعظمه كما يعرض للنساء فينبغى أن تشق في جوانبه العليا بشقين يشبهان شكلا هلاليا يتصل كل واحد منهما بالآخر عند نهايتهما حتى يكون الخط الأكبر محيطا بالأصغر على هذه الصورة:



Fig. 125

Huntington
(margin)

1. cett. وارمه قبيحه, V وارمه, P وارم قبيح.

to *g*. Then dissect away the skin² between the two incisions and remove the fat and sew up as we have described; and apply styptic powder and the necessary dressings until healed. But if you cannot make the incision as full and perfect as it ought to have been, because the patient is restless, or because haemorrhage arises, you should pack the wound with cotton wool soaked in corrosive ointment and leave till it eats away the remainder of the fat; then dress until healed.

² M here reads 'flesh'.

من خطّ بَ الى خطّ ج ثمّ تسلخ الجلد² الذى فيما بين الشقين
وتنزع الشحم وتستعمل ما ذكرنا من الخياطة والذرورات وما يحتاج اليه
من العلاج حتى يبرأ، فإن لم تستوعب قطع ما ينبغى لك قطعه
من أجل قلق العليل او من قبل نزف الدم فينبغى أن تحشو
15 الجرح بالقطن المغموس فى المرهم الأكال وتتركه حتى يأكل ما بقى
من الشحم ثمّ تعالجه حتى يبرأ،

M. اللحم 2.

CHAPTER FORTY-EIGHT. On the opening of axillary tumours.

These tumours under the armpit are of the type of scrofulous tumours, hard, enclosed in a capsule. Some contain humidity. Those that contain humidity should be opened with a semicircular incision like this, from *b* to *g* (fig. 126). When you have removed all the pus that had been in the tumour, pack the wound with teased-out cotton wool and leave till another day. Then remove the cotton wool and dress with a suitable ointment until healed. If the tumour be of the nodular scrofulous kind, cut directly down on it just as we prescribed for that kind. If the wound continue to discharge pus, apply the cautery to it as prescribed before.

BOOK TWO. CHAPTER FORTY-EIGHT

These directions for the incision of an axillary abscess follow the lines laid down by the older authors such as Celsus (VII. 2) and Paulus (VI. 34). The latter, however, has a very complicated range of incisions and advises against a circular one; whereas Albucasis puts forward only two with sketches, one of which is the circular one.

الفصل الثامن والأربعون فى بَطِّ الأورام التى تعرض تحت الإبط
هذه الأورام التى تعرض تحت الإبط هى من نوع الخنازير صلبة
يحويها كيس ومنها ما يحوى رطوبات فما كان منها يحوى رطوبات
فينبغى أن يشق شقاً هلالياً على هذا الشكل :

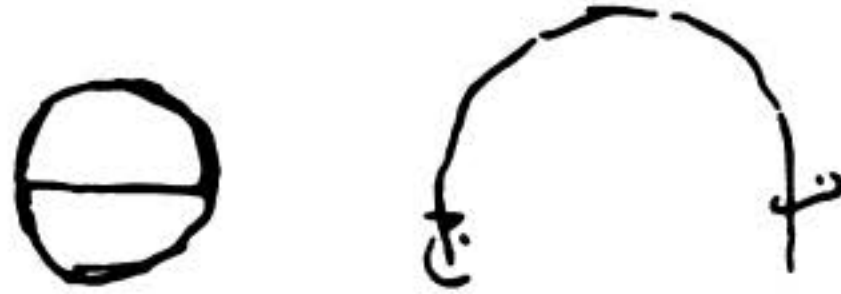


Fig. 126

Marsh

Huntington

5 من خطِّ بَ الى خطِّ جَ فإذا استغرقت جميع ما فى الورم من المدّة
فاحشه بالقطن البالى واتركه الى يوم آخر ثم تنزع القطن وتعالج
بالمرهم الموافق لذلك حتى يبرأ ، فإن كان الورم من نوع عقيد
الخنازير فشق عليه كما ذكرنا فى الشق على الخنازير سواء فإن تعادى
الجرح الى أن يمد القبح فاستعمل فيه الكى على ما ذكرنا فيما
10 تقدّم ،

CHAPTER FORTY-NINE. On opening a tumour arising from a blood-vessel, called an aneurysm.

When an artery is injured and the overlying skin scars, a tumour very often arises from this; the same thing happens to a vein: a swelling and a tumour. And these are the signs by which you may diagnose whether the swelling and tumour arise from an artery or a vein: if it be from an artery the tumour will be a deep and elongated mass; and when you press upon it with your finger there will be a feeling of pulsation. But if it arises from a vein the swelling will be circular and superficial. It is dangerous to make an incision on tumours of this kind, specially in the axilla, the groin, the neck, and in many other parts of the body; it is indeed highly dangerous, so in these you must avoid treatment by the knife; also in those in the limbs and in the head it must be avoided. But any such that arises from the inflation of the mouth of an artery, you may cut down in the skin over that with a longitudinal incision; then open up your incision with hooks and dissect away the artery, freeing it from the tissues till it is laid bare. Then run a needle beneath the artery to reach the other side, and tie the artery in two places with a double thread, as I showed you for the extraction of the temporal arteries. Then with the scalpel prick the part between the two ligatures to let out all the blood and get the tumour down. Then apply dressings to excite suppuration until the ligatures fall away; then dress with suitable ointments until healed. If the swelling be due to a vein that has been penetrated, you should gather up with your hand as much of the tumour as you can, together with the skin; then pass a needle beneath

BOOK TWO. CHAPTER FORTY-NINE

This chapter on aneurysm comes from Antyllus whose teaching was followed by Aetius (xv. 10) and Paulus (vi. 37) and then Albucasis. The needle for treating this is

therefore of ancient origin but does not appear, from any description, to have been of special design.

الفصل التاسع والأربعون فى شق الورم الذى يعرض من قبل
الشریان او الوريد "ويسمى انورسما"

اذا جرح الشريان والتحم الجلد الذى فوقه فكثيرا ما يعرض من
ذلك ورم وكذلك يعرض أيضا للوريد أن يعرض فيه نفخ وورم،
5 والعلامات التى يعرف بها إن كان الورم والنفخ من قبل شريان او
من قبل وريد فالورم اذا كان من قبل الشريان يكون مستطيلا مجتمعاً
فى عمق الجسد وإذا دفعت الورم بأصبعك تحس به كأن له صريراً
والذى يكون من قبل الوريد يكون الورم مستديراً فى ظاهر الجسد،
والشق على هذه الأورام خطر ولا سيما ما كان فى الإبط والأربية
10 والعنق وفى مواضع كثيرة من الجسد وكانت عظيمة جداً فينبغى أن
تجتنب علاجها بالحديد وما كان منها أيضاً فى الأطراف او فى الرأس
فينبغى أن تجتنب؛ فما كان منها من انتفاخ فم الشريان فشق عليه
فى الجلد شقاً بالطول ثم تفتح الشق بصنارات ثم اسلخ الشريان
وخلصه من الصفاقات حتى ينكشف ثم تدخل تحته إبرة وتنفذها الى
15 الجانب الآخر وتشد الشريان بخيط مشق فى موضعين على ما عرفتك
فى سّل الشريانيين اللذين فى الأصداغ ثم تنخس بمبضع الموضع
الذى بين الرباطين حتى يخرج الدم الذى فيه كله وينحل الورم ثم
تستعمل العلاج الذى يولد القيح حتى تسقط الرباطات ثم تعالجه
بالمراهم الموافقة لذلك حتى يبرأ، فإن كان الورم من قبل شق
20 الوريد فينبغى أن تمسك بيدك ما أمكنك من الورم مع الجلد ثم

1. AM, om. cett.

the place which you have grasped in your hand and run it through, threaded with a double thread, until it emerges at the other side; then with it tie a strong ligature round the swelling as I mentioned to you on ligaturing the swollen uvula, from either side, with the ends of the thread. If you fear that the threads may come loose, pass a second needle and thread beneath the whole tumour to intersect with the passage of the first needle; and tie your threads in four places. Then incise the tumour in the centre to extract the contents. Then cut away the superfluous skin and leave what has been ligatured. Then put on that a pad previously soaked in wine and oil; then apply the treatment with lint and ointments until healed.

تدخل إبرة أسفل من الموضع الذى أمسكت بيدك وتنفذها وفيها خيط
مثنى حتى تخرجها من الجانب الآخر ثم تربط به الورم ربطاً جيداً
على حسب ما ذكرت لك فى ربط العنبة من الجهتين بطرفى الخيط،
فإن خشيت أن تنسلّ الخيوط فأدخل إبرة أخرى بخيط آخر تحت
الورم كله عند تقاطع الإبرة الأولى وشدّ خيوطك فى أربعة مواضع ثم
شق الورم فى وسطه حتى اذا خرج ما فيه فاقطع فضلة الجلد واترك
ما كان منه مربوطاً ، ثم ضع عليه رفادة قد غمستها فى شراب وزيت
ثم تستعمل العلاج الذى يكون بالقتل والمراهم حتى يبرأ ،

CHAPTER FIFTY. On the tumour arising from the twisting of a tendon.

As a tumour arises on an artery or a vein, so may it also come in a tendon when it has been bruised; or it may arise from excessive fatigue, or such causes. This occurs mostly at the wrists, at the heel, and at all sites of articular movement. It is a hard tumour of the same colour as the rest of the body, and is generally painless, and when strong pressure is put upon it the patient has a numb feeling in it. It is a tumour that does not form in the deeper tissues but is subcutaneous. It is freely movable laterally, but will not go forward or backward. Those that are situated on joints should certainly not be tackled with the knife, for that often causes palsy. Incise the skin of those occurring on the head or forehead, and if the tumour be small take hold of it with the forceps and cut it away by the root. But if it be large, catch it up with a hook and dissect it away and remove it; and sew up the incision and dress until healed.

BOOK TWO. CHAPTER FIFTY

Ganglion, the subject of this chapter, was dealt with by so early an author as Hippocrates in his work on joints (40). Albucasis adds nothing new.

الفصل الخمسون فى الورم الذى يعرض من التواء العصب
 كما يعرض الورم فى الشريان والوريد كذلك يعرض الورم فى
 العصب اذا حدث فيه ضربة او حدث عن تعب مفرط او نحوه ويكون
 أكثر ذلك فى مواضع المعصمين والعقب وفى كل موضع تتحرك فيه
 5 المفاصل وهو ورم جاسى يشبه لونه سائر الجسد ويكون فى أكثر
 الأحوال من غير وجع وإذا ضغط بشدة أحس فيه العليل "شبه الخدر"
 ولا يكون الورم مجتمعاً فى عمق الجسد بل يكون تحت الجلد وهو
 يتحرك الى كل جهة وليس يذهب الى قدام ولا الى خلف، فما كان
 منها فى المفاصل فلا ينبغى أن يتعرض بالحديد فإنه ربما أحدث
 10 زمانة وما كان منها فى الرأس او فى الجبهة فشق الجلد بمبضع ،
 فإن كان الورم صغيراً فامسكه بمنقاش واقطعه من الأصل وإن كان
 كبيراً فعلقه بصنارة واسلخه ثم انزعه واجمع الجرح بالخياطة وعالجه
 حتى يبرأ،

HS, شبه الموت, V شبه الحدد, B شبه الجذب, A شبه الحدة, M, 1.
 B. يعرض له, M يتعرض له. 2. P. بشده

CHAPTER FIFTY-ONE. On the amputation of warts occurring on the belly.

Some people often get warts on the belly and on the rest of the body, called fungous warts, because of their resemblance to fungi. They have a slender pedicle and a broad head, the edges of which are sometimes inverted; and some are small, whereas others of them grow very big. I myself once saw a man who had two warts on his belly that looked more like fungi than anything else; they were white and had thin pedicles. Their edges were inverted and had split open, and a humour flowed continually from them. I amputated them both and weighed them: one came to about eighteen ounces,¹ and the other six ounces. This is the operation for amputating them: examine the patient carefully, and if he be of a humid temperament and the colour of the warts be white, and if they are soft, with a thin stalk, amputate them with a broad scalpel. But you should also have at hand cauteries in a fire; for often in amputating them there is much haemorrhage. So, if the bleeding be a hindrance to you, be quick and cauterize them. On the other hand if you see that the patient is frightened and dreads the cutting of them with the scalpel, take a wire of stout lead, and ligature this type of wart and leave for two days. Then increase the stricture by the lead wire and go on doing this as it sinks into the wart, until the wart is cut through and spontaneously falls away with no trouble. But if the warts have stout pedicles there is some risk and fear in the cutting of them, especially those that occur on the belly. Sometimes, however, you can cut away the half, or some part, and then cauterize to prevent recurrence. Then dress until the wound is healed.

But beware of trying to cut away growths that are dark in colour, with little sensation and hideous in appearance, for they are cancerous tumours. I shall soon be mentioning cancer.

¹ M adds 'by the Baghdad reckoning'.

BOOK TWO. CHAPTERS FIFTY-ONE
AND FIFTY-TWO

The ligation of fungous warts was described by, for example, Paulus (vi. 87); and the ensuing account of the treatment of the pro-

truding navel is a transcription of chapter 51 of Book vi.

الفصل الحادى والخمسون فى قطع الثآليل التى تعرض فى البطن
 قد تعرض كثيرا لبعض الناس فى بطونهم وفى سائر أبدانهم
 ثآليل تسمى الفطرية¹ لشبهها بالفطر² أصلها رقيق ورأسها غليظ قد
 تحولت شفتاه ويكون منها صغار ويكون منها ما يعظم جدا ، ولقد
 5 شاهدت رجلا وفى بطنه ثولولان³ كانت أشبه الأشياء⁴ بالفطر لا فرق
 بيضا رقيقة الأصل قد تحولت شفتاهما وتشققت والرطوبة تسيل منهما
 دائما ، فقطعتهما وألقيت فى وزن الواحدة نحو ثمانى عشرة أوقية⁵
 وفى الأخرى نحو ست أواق ، والعمل فى قطعها أن تنظر فإن كان
 العليل مرطوبا وكان لون الثولول أبيض رطبا رقيق الأصل فاقطعه
 10 بمبضع عريض ولتكن بحضرتك المكاوى فى النار فكثيرا ما يندفع عند
 قطعها دم كثير فتبادر إن غلبك الدم فتكويها ، فإن رأيت العليل
 جبانا وفزع من القطع بالحديد فخذ خيطا من رصاص محكم وشد به
 الثولول الذى هذه صفته واتركه يومين ثم زد فى شد الرصاص فلا
 تزال تشد الرصاص كلما أثر فى الثولول حتى ينقطع ويسقط من ذاته
 15 من غير مؤنة ، فإن كان الثولول غليظ الأصل ففى قطعه بعض الخوف
 والغرر ولا سيما ما كان فى البطن ولكن قد يمكن أن يقطع نصفه أو
 بعضه ثم تكويه لثلا يعود ، ثم تعالجه حتى يبرأ الجرح ، واحذر أن
 تعرض لقطع ثولول يكون كمد اللون قليل الحس سمج المنظر فإنه ورم
 سرطانى وسنأتى بذكر السرطان بعد هذا ،

M, ثلولين B, ثلولتان 3. BM. بالقطر 2. BM. القطرية. 1.
 M. <بالبغدادى> 5. MV. شيا 4. cett. اثلولين P, اثلولين

CHAPTER FIFTY-TWO. On the treatment of protruding navel.

The navel becomes prominent from many causes; either from a rupture of the peritoneum over the abdomen, so that omentum or intestine comes through it as in other ruptures; or from blood extravasation from an artery or vein, as we have mentioned; or else from wind trapped in it. If it be due to ruptured peritoneum and protruding omentum, the colour of the tumour will be the same as the rest of the body; it will be soft and painless and will seem to change its position; But if it be due to an escape of bowel the change of position, compared with what we have described, will be greater, and it will disappear on digital pressure, and then will recur; and often there will be crepitus with it, and it will increase in size on entering the bath or on violent exertion. If it be due to fluid, it will be soft and will not disappear on manual pressure, nor will it grow larger or smaller. If it be due to blood, then in addition to these signs the tumour will appear blackish. If it arise from a fleshy overgrowth, the tumour will be solid and hard, remaining always constant in bulk. If it be due to wind, it will be soft to the touch. The operation for these is to examine, and if the exomphalos be due to arterial or venous blood, or wind, you should withhold treatment since it is dangerous in these cases, with an uncertain outlook, as I taught you in the chapter on tumours arising from an artery or vein. But if it be due to bowel or omentum, bid the patient hold his breath and stand stiffly upright; then make an ink mark all round the umbilicus; then tell him to lie on his back before you; then with a broad scalpel cut all round the umbilicus along the line marked out; then draw up the middle of the tumour with a large hook; then ligature the site of the incision with a strong thread or silk cord, tying it securely with a slip-knot. Then open

الفصل الثانى والخمسون فى علاج نتو السرة

يكون نتو السرة من أسباب كثيرة إما من انشقاق الصفاق الذى على
البطن فيخرج منه الشرب او المعاء على ما يعرض فى سائر الفتوق وإما
من دم ينبعث من وريد او شريان على ما تقدم وإما من ريح تحتقن
فيه، فإن كان من قبل انشقاق الصفاق وخرج الشرب فإنه يكون لون
الورم شبيها بلون الجسد ويكون لنا من غير وجع ويظهر مختلف الوضع
وان كان من قبل خروج المعاء فيكون وضعه مع¹ ما وصفنا أشد اختلافا
فإذا كبسته بأصابعك يغيب ثم يرجع وربما كان معه قرقرة ويعظم
كثيرا عند دخول الحماة والتعب الشديد، فإن كان من قبل الرطوبة
فإنه يكون لنا لا يغيب اذا كبسته بيدك ولا يزيد ولا ينقص، فإن¹⁰
كان من قبل الدم فإنه مع هذه العلامات يظهر الورم الى السواد،
فإن كان من قبل لحم نابت فيكون الورم جاسيا صلبا ويثبت على قدر
واحد، فإن كان من قبل الريح كان لمسه لنا، والعمل فى ذلك
أن تنظر فإن كان نتو السرة من قبل دم الشريان او الوريد او الريح
فينبغي أن تمتنع من علاجه فإن فى ذلك خوفا وغررا كما أعلمتك فى¹⁵
الباب الذى ذكرت فيه الأورام التى تحدث من قبل الشريان والوريد،
فإن كان نتو السرة من قبل المعاء او الشرب فينبغى أن تأمر العليل
بأن يمسك نفسه ويقف واقفا متدا ثم تعلم بالمداد حول السرة كلها
ثم تأمره أن يستلقى بين يديك على ظهره ثم تحز بمبضع عريض حول
السرة على الموضع الذى علمت بالمداد ثم تمد وسط الورم الى فوق²⁰
بصنارة كبيرة ثم تربط موضع الحز بخيط قوى او بوتر² حرير رطا وثيقا

1. B, om. H. 2. AV. بوتر.

the middle of the tied tumour above the ligature and insert your forefinger and search for the bowel; and if you find it caught in the ligature slacken the slip-knot and push the bowel back into the abdomen. But if you find omentum, stretch it with a hook and cut off what is superfluous. And if you come across an artery or vein, tie it securely and go on with your work: take two needles and thread them with two strong threads and insert the two needles into the incision that you have made around the tumour, pushing them in so that they cross one another. Then ligature the tumour in four places over the needles. If you wish, you may remove the needles and let be until the ligatured tissue necroses and falls away of its own accord; or cut it away when it is thin and necrosing. Then dress with the needful ointments until healed. But if the prominent navel be due to an overgrowth of flesh there or from humidity, you should slice the tumour as we have said and get out all the blood or humidity to be found there. Then dress it with stimulating dressings.

ويكون عقد الرباط أنشودة ثم تفتح وسط الورم المشدود فوق الرباط
 وتدخل فيه أصبعك السبابة وتطلب المعاء فإن وجدته قد أخذ
 الرباط فأرخ الأنشودة وادفع المعاء الى داخل البطن وإن وجدت
 25 ثرا فمده بصنارة واقطع فضله، فإن اعترضك شريان او وريد فاحزمه
 نعما وارجع الى عملك وخذ إبرتين فأدخل فيهما خيطين قويين وتدخل
 الإبرتين في الحز الذي صنعت حول الورم مصلبتين قد أنفذتهما، ثم
 تشد الورم في أربعة مواضع على الإبر وإن شئت نزع الإبر وترك
 الموضع حتى يعفن اللحم المشدود ويسقط من ذاته او تقطعه اذا رُق
 30 وعفن، ثم تعالجه بما ينبغي من المراهم حتى يبرأ، فإن كان نتو
 السرة من لحم نابت فيها او من رطوبة فينبغي أن تقور الورم كما
 قلنا وتخرج الدم او الرطوبة التي تجد فيها ثم تعالجه بما يلزم
 الموضع،

CHAPTER FIFTY-THREE. On the treatment of cancer.

We have spoken, in the relevant section, of the kinds of cancer and of the way in which medical treatment of them is to be attempted; with a warning against treatment by the knife lest they ulcerate. We also mentioned the cancer arising in the uterus and gave a warning against its treatment.

The Ancients said that when a cancer is in a site where total eradication is possible, such as a cancer of the breast or of the thigh, and in similar parts where complete removal is possible, and especially when in the early stage and small, (then surgery was to be tried).¹ But when it is of long standing and large you should leave it alone. For I myself have never been able to cure any such, nor have I seen anyone else succeed before me. The procedure in a case amenable to treatment, as we have said, is first for the patient to be purged several times from black bile; then bleed him if his veins seem full. Then put the patient in the most convenient position for operating. Then attach to the tumour hooks suited to it; then make a circular incision all round to include the skin with the utmost thoroughness so that not the least root of it remains; let the blood flow and do not stanch it quickly; but put pressure upon the place and squeeze out all the thick blood, either by hand or with any instrument you can. If in operating you get a very severe haemorrhage from cutting an artery or vein, cauterize the vessel until the bleeding stops; then dress in the usual way until healed.²

¹ Some such addition as this is necessary; there is a lacuna here in the Arabic.

² This is the reading of V. AHMPS add a pious 'God willing', as they frequently do. B, however, instead of 'until healed', reads 'and God knows best', which suggests that someone had his doubts about the efficacy of this treatment.

BOOK TWO. CHAPTER FIFTY-THREE

This interesting chapter skilfully summarizes the opinions of Hippocrates (*Aph.* vi. 38), Celsus (v. 28), and Galen (*ad Glauc.*, lib. II) whose words are copied by Paulus (vi. 45) and here by Albucasis. Albucasis shows here that he was no mere copyist. His own per-

sonal experiences in operating for carcinoma form one of the many little touches that enliven his pages and prove that he really did rescue surgery from being a merely academic exercise.

الفصل الثالث والخمسون فى علاج السرطان

قد ذكرنا فى التقسيم أنواع السرطان وكيف السبيل الى علاجه
بالأدوية والتحذير "من علاجه" بالحديد لئلا يتقرح وذكرنا السرطان
المتولد فى الرحم والتحذير من علاجه،

5 وذكرنا الأوائل أنه متى كان السرطان فى موضع يمكن استئصاله كله
كالسرطان الذى يكون فى الثدي او فى الفخذ ونحوها من الأعضاء
المتحركة لإخراجه بجملته ولا سيما اذا كان مبتدئا صغيرا وأما متى قدم
وكان عظيما فلا ينبغي أن تقره فإننى ما استطعت أن أبرئ منه أحدا
ولا رأيت قبلى غيرى وصل الى ذلك، والعمل فيه اذا كان متغنا
10 كما قلنا أن تتقدم فتسهل العليل من المرة السوداء مرات ثم تفصده
إن كان فى العروق امتلا¹ بين ثم تنصب العليل نصبة يتمكن فيها
بالعمل² ثم تلقى فى السرطان الصنائير التى تصلح له ثم تقوره من كل
جهة مع الجلد على استقصاء حتى لا يبقى شئ من أصوله واترك الدم
يجرى ولا تقطعه سريعا بل اعصر المواضع واسلت الدم الغليظ كله
15 بيدك او بما أمكنك من الآلات، فإن اعترضك فى العمل نزف دم
عظيم من قطع شريان او وريد فاكو العرق حتى ينقطع الدم ثم عالجه
بسائر العلاج³ الى أن يبرأ⁴

1. V, cett. منها بعلاجها M, منه بعلاجه V, 1.
2. H. من العمل.
3. V,
4. cett. الى ان يبرأ ان شاء الله B, والله اعلم

CHAPTER FIFTY-FOUR. On the treatment of dropsy.

We have mentioned in the section the kinds of hydrops, and the manner in which the fluid collects; the signs of each kind; and the medical treatment of them. The only kind which is to be treated by operation is the one called 'ascites'. But neither the kind called 'tympanites' nor general anasarca are to be treated by operation at all, for that would be fatal. When you have been trying medical treatment for this kind, for ascites, and your treatment is ineffectual, then consider; and if the patient be in a low state or suffer from other disease beside the ascites, such as cough or diarrhoea or some such, then beware of attempting operative treatment since it will be of uncertain outcome. But if you see that the patient has plenty of strength and suffers under no other complaint beside the dropsy, and is of neither tender nor advanced age, then the operative procedure in this case is for you to place the patient, standing, before you, with an assistant behind him to apply manual pressure to his abdomen and push the fluid down into the pelvis. Then take a pointed scalpel of this shape (fig. 127), sharp along both sides, long, and very sharp at the end like a scalpel, but slightly stubby so that in operating you do not reach the intestines and

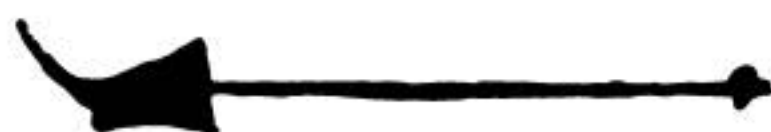
BOOK TWO. CHAPTER FIFTY-FOUR

This interesting chapter on ascites calls for a short review of classical opinions on the subject. Hippocrates mentions it in passing (*Aph.* VI. 27): *ὁκόσοι . . . ὑδροπικοὶ τέμνονται ἢ καίονται, ἐκρύνεντος . . . τοῦ ὕδατος ἀθρόου, πάντως ἀπόλλυνται*. 'When dropsical people are opened up . . . if the water flows away all at once they mostly die.' It is clear from this that abdominal dropsy was commonly treated by opening the abdominal wall either with a knife or cautery to evacuate the fluid. Then Celsus (VII. 15) describes the operation: *Quidam autem sub umbilico fere quatuor interpositis digitis in sinistra parte; quidam ipso umbilico perforato id facere consuerunt. . . . Ferramentum . . . tale esse debet ut fere tertiam digiti partem latitudo mucronis impleat . . . demittendumque . . . ut membranam . . . transeat. Eo tum plumbea aut aenea fistula coicienda est, vel recurvatis in exteriorem partem labris, vel in media circumurgente quadam mora, ne tota intus delabi possit*. 'Some usually do it [i.e.

perforate] about four inches below the navel to the left; some by perforating the navel itself. The instrument should be such as to have a point about a third of an inch wide, and should be passed through the peritoneum. Then a leaden or bronze tube is to be introduced, either having outward curved lips, or else with a collar in the middle to prevent it wholly slipping in.' This gives a pretty clear account of the instruments needed; namely a knife one-third of an inch broad at the extremity, and a tube with a guard or bevel to pass into the peritoneal cavity as soon as this one-third-inch slit is made. He proceeds also to say that only so much was to be discharged daily following the insertion of the tube; which, between times, was to be kept stopped up with some material. Galen, commenting on Hippocrates' *Aphorisms* remarks that paracentesis was common in his days. Caelius Aurelianus, *Tardarum Passionum* (III. 8), describes the

الفصل الرابع والخمسون فى علاج الحبن

قد أخبرنا فى التقسيم أنواع¹ الاستسقا² وكيف يكون اجتماع الماء
وعلامات كل نوع وعلاجه بالأدوية، والذي يعالج بالحديد إنما هو
النوع الزقّى وحده ولا يقرب بالحديد النوع الطبلّى ولا النوع اللحمى
5 البتّة فإنّ ذلك قتال، اذا كت قد عالجت هذا النوع من الحبن
الزقّى بالأدوية ولم ينجع علاجك فانظر فإن كان العليل قد بالغ فيه
الضعف او كان به مرض آخر غير الحبن مثل أن يكون به سعال او
إسهال ونحو ذلك فإياك أن تعالجه بالحديد فإنه غرر فإن رأيت
العليل وافر القوة ليس به مرض غير الحبن وحده ولم يكن صبيّا ولا
10 شيخا فوجه العمل فيه أن تقيم العليل واقفا بين يديك وخادم خلفه
يعصر بطنه بيديه ويدفع الماء الى أسفل الى ناحية العانة ثم تأخذ
مبضعا شوكتيا على هذه الصورة:



Huntington



Marsh

محدود الجهتين طويلا محدّد الطرف كالمبضع إلا أنّ فيه بعض
الفتس³ قليلا لئلا تجوز به عند العمل الى المعاء فتؤذيه ثم انظر فإن

1. BHP. بانواع. 2. H. الحبن. 3. V, M, القصر, الصقر.

4. P. ينظر, M. سحر, HV. نظرت, B. تنظر, A. تضرب, S.

damage them. Then consider; and if the dropsy arises from the region of the intestines then you should make an incision three fingers' breadth directly below the umbilicus, above the pubes. If the dropsy arises from disease of the liver, let your incision be three fingers to the left of the umbilicus. If it arises from disease of the spleen, let the incision be three fingers to the right.¹ Moreover, the incision must not be on the side which the patient wishes to lie on, so that the superfluities may not flow to the damaged part. Then pierce the skin with the instrument, introduce the instrument into that incision, and bring the scalpel up between the skin and the membrane, as if excoriating, over an area about the size of a fingernail. Then pierce through the membrane till the scalpel reaches a cavity, which will be where the water is; then withdraw the scalpel and put into the opening the instrument shaped like this (fig. 128); it resembles a fine section of reed, made of silver, bronze or white copper; smooth and well polished, with a small opening at the lower end and three at the sides, two

¹ The spleen being on the left and the liver on the right, should these instructions be reversed?

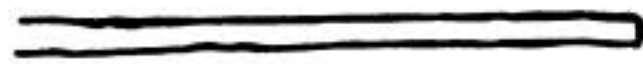
use of a female catheter after the perforation has been made: *deinde muliebri cathetere liquorem detrahimus*. . . . Paulus (VI. 1) is evidently the immediate source of Albucasis' teaching on the subject; the Greek in many places being copied word for word. Paulus was the first to describe the special pointed knife which he calls σκολόπιον, perhaps a shortening of the Hippocratic word σκολοπομαχαίριον (from σκόλος a stake or spike). This knife is illustrated by Albucasis (fig. 127); the Marsh drawing may be more reliable; the Huntington one being, of course, later and perhaps guesswork; at all events it does not correspond with what one would expect for a spike-shaped knife. Paulus also then describes the cannula (see note on chapter 59 on the word used) for actually drawing off the fluid thus: ὁ χαλκοῦς καλαμίσκος . . . ἔχων τὴν ἐκτομὴν παραπλήσιαν τοῖς γραφικοῖς καλάμοις—i.e. with the end cut like the shape of a writing reed. This clearly indicates a bevelled or pointed end to the tube or cannula, like modern injecting needles. This was perfectly understood by Albucasis and is clearly depicted in the

drawings in both MSS. (fig. 129). It is to be noted, however, that he first gives an account, with illustrations, of the plain cannula (fig. 128). Now with regard to the bevel-ended ones he remarks that the upper end is supplied with a ring. This, taken with the drawings, probably means that the end outside the abdominal wall was plain, flat, and circular, unlike the bevelled pointed end inserted into the abdomen. The text of Albucasis' description suggests that the bevelled pointed cannula was not his first choice; the plain variety was the principal one; and this corresponds more with Celsus' description. The Marsh figure (fig. 128) corresponds better than the Huntington with the words . . . *recurvatis in exteriorem partem labris*; that is, the outer part has its lips or sides turned outward or expanded, to prevent it slipping into the abdominal cavity. Albucasis gives a characteristically neat and original feature to his instrument; he says that, besides the opening at the end, it was to have three other openings in the sides of the instrument.

١٥ كان تولد الحبن من ناحية الأمعاء فينبغي أن تبعد بالشق من السرة
 قدر ثلاث أصابع الى أسفل بحدائها فوق العانة، فإن كان تولد
 الحبن من قبل مرض الكبد فليكن شقك يسرة من السرة بثلاث أصابع،
 فإن كان تولده من قبل مرض الطحال فليكن الشق في الجانب الأيمن
 بقدر ثلاث أصابع ولا ينبغي أيضا أن يكون الشق في الجانب^٥ الذي
 ٢٠ يريد العليل أن يضطجع عليه لئلا تسيل الفضول الى ذلك الموضع
 الضعيف، ثم تثقب بالآلة الجلد كله ثم تدخل الآلة في ذلك الشق
 وترفع يدك بالمبضع بين^٧ الجلد والصفاق كأنك تسلخه ويكون القدر الذي
 تسلخه قدر الظفر او نحوه، ثم تثقب الصفاق حتى يصل المبضع الى
 موضع فارغ وهو موضع الماء ثم تخرجه وتدخل في الثقب الآلة التي
 ٢٥ هذه صورتها :



Marsh



Huntington

Fig. 128

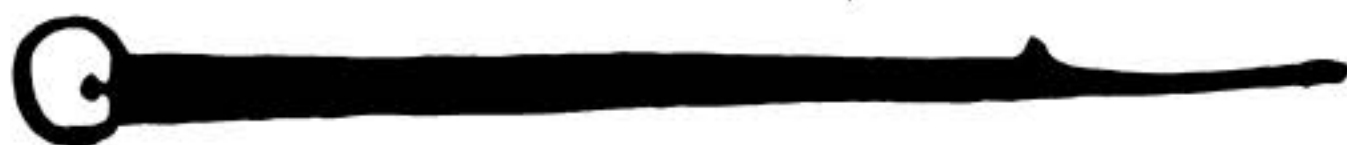
وهي شبه أنبوبة^٨ من قصبة^٩ رقيقة^٨ تصنع من فضة او من نحاس او
 من اسبادروية ملساء مصقولة لها في أسفلها ثقب صغير وفي جوانبها

5. om. H. 6. om. AHP. 7. تحت V.

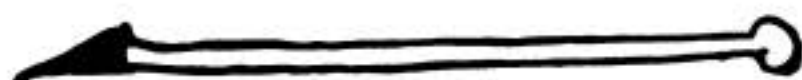
8. om. MPV. 9. B فصد. AHS. فضة.

on one side and one on the other, as you see. Its extremity may be cut to the shape of a writing reed like this (fig. 129); the upper end of it is supplied with a ring. When the instrument reaches the fluid, the fluid will at once pass down into it. Evacuate at one time only a moderate amount of fluid; for if you evacuate more than you should at a time, the patient may die through a dissolution of his animal spirits, or he will undergo a fainting that is next door to death. But let out such quantity of fluid as is proportionate to his strength and as is indicated to you by the patient's condition: the strength of his pulse and the goodness of his colour. Then withdraw the instrument and keep (the rest of) the fluid in. For it will be immediately held back by the skin that closes the opening in the peritoneum, which, as I have told you, must be perforated in that manner. Then repeat the use of the instrument another day if you see that the patient can tolerate it, and withdraw again a small quantity of fluid. And do this daily, watchful and on guard against error, until there is only a trace of fluid left. But if you are afraid for the patient and leave a large amount of fluid, treat him by burying him in hot sand, and by heavy sweating in the bath and in the sun, and letting him go thirsty; while you treat him with drying medicines, till he is well. He should also be cauterized on the abdomen and on the liver and spleen after the paracentesis, as I have previously described.

ثلاث ثقب الاثنان¹⁰ من جهة والواحدة من جهة كما ترى وقد يصنع طرفها مبريا على هيئة برية القلم على هذه صورتها :



Marsh



Huntington

Fig. 129

30 في طرفها الأعلى حلقة فإن الآلة اذا وصلت الى الماء فإنه ينزل من ساعته على الآلة، فتستفرغ من الماء في الوقت قدرا متوسطا لأنك إن استفرغت منه أكثر مما ينبغي في الوقت فرما مات العليل بانحلال روحه الحيوانى او يعرض له غشى يقرب من الموت، ولكن استفرغ منه على قدر قوته وما يدلّك عليه أحوال العليل من قوة نبضه ومن حسن لونه، 35 ثم تخرج الآلة وتحبس الماء وذلك أنه يحتبس من ساعته بسبب الجلد الذى يمسك الثقب الذى على الصفاق الذى أخبرت أن تبطه على تلك الصفة، ثم تعيد الآلة يوما آخر إن رأيت العليل محتملا لذلك وتخرج أيضا من الماء القدر اليسير تفعل ذلك آياما وأنت على رقبة وتحفظ من الخطأ حتى لا يبقى من الماء إلا اليسير، فإن 40 خفت على العليل وتركت من الماء شيئا كثيرا فعالجه بالدفن فى الرمل الحار والتعرق¹¹ الكثير فى الحمام والشمس وصبره على العطش وعالجه بالأدوية المجففة حتى يبرأ، ويكوى على المعدة والكبد والطحال بعد إخراج الماء على ما وصفت فيما تقدم،

10. cett. الاثنين، M. تنثنى، H. لاتبتين، SV. الاسن.

11. M. التعرف، H. التعريق.

CHAPTER FIFTY-FIVE. On the treatment of boys born with imperforate urinary meatus; or with the meatus small or not in the proper place.

Sometimes a boy is born from his mother's womb with the glans penis not perforate. So at the moment of his birth you should be quick and make a perforation with a fine scalpel figured thus (fig. 130).¹ Then put in the opening a slender leaden sound, tie it and keep it in for three or four days. When he wishes to make water, it will be removed² and he will do so; then put it back. If you do not put in the leaden sound it may be that the urine passing through the place will prevent the wound from healing.

The case having too narrow a meatus should be treated with the leaden sound, as we have said, for many days until it is wide enough.

In those cases having a misplaced meatus—for example, there are some born with the opening at the edge of the glans so that they cannot make water forwards until the opening of the penis is lifted up by hand, nor can they beget, since the semen cannot reach directly to the uterus, a disorder which is very ugly. The manner of operating in this case is for the patient to lie back; then with your left hand draw out his glans firmly and cut the end of the glans at the place of the meatus with a broad knife or sharp scalpel,

¹ In H only.

² The reading of the MSS. apart from P is 'he will remove it', which seems a lot to expect of a new-born baby.

BOOK TWO. CHAPTER FIFTY-FIVE

This chapter on imperforate urinary meatus is largely transcribed from Paulus (vi. 54). Albucasis here illustrates a fine-pointed scalpel (fig. 130) for making the opening if entirely lacking. The Huntington MS. alone shows it as an exceedingly fine small knife with a slightly bellied blade; evidently

designed for use, as he says, just after birth. Albucasis follows Galen (*Medicus* 19) in recommending the insertion of a leaden sound to keep the opening free. Galen used a σωληνίδιον (ibid. (Kühn) xiv. 787), or little tube, of lead; whereas Albucasis recommends a solid sound.

الفصل الخامس والخمسون فى علاج الأطفال الذين يولدون ومواضع
 البول منهم غير مثقوبة او يكون الثقب ضيقا او فى غير موضعه
 قد يخرج بعض الصبيان من بطن أمه وكمرته غير مثقوبة فينبغى أن
 تبادر بثقبه من ساعة يولد بمبضع رقيق جدا¹ على هذه الصورة²:

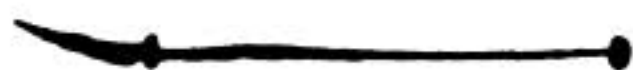


Fig. 130

Huntington

ثم تضع فى الثقب مسامرا رقيقا من رصاص وتربطه وتمسكه ثلاثة
 أيام او أربعة فمتى أراد البول² نَحَى عنه² وبال ثم رَدّه، وإن لم
 تجعل الرصاص فقد يمكن أن البول الذى يسلك على الموضع لا يتركه
 ينغلق³،

وأما الذى يكون ثقبه ضيقا فيعالج بالرصاص كما قلنا أياما كثيرة
 حتى يتسع⁴،

والذين يكون منهم الثقب فى غير موضعه وذلك أن منهم من يولد
 والثقب عند نهاية الكمرة فلا يقدر أن يبول الى قدام حتى يرفع
 الإحليل بيده الى فوق ولا يولد له من قبل أن المنى لا يقدر على
 الوصول الى الرحم على استقامة⁴ وهى علة⁴ قبيحة جدا، ووجه العمل
 فى ذلك أن يستلقى العليل على ظهره ثم تمد كمرته بيدك اليسرى
 مدا شديدا وتبرى رأس الإحليل بشفرة او بمبضع حاد كبرية القلم او

1. om. M. 2. P, ونحاه V, نحاه M, cett. 3. BM, يتعلق,
 P. ومجامعته. 4. V. ان سعلق, AP, ان سعلق

as if sharpening a pen, or as if you were whittling something, so that the middle of it protrudes like a glans penis and the opening falls in the middle as it should. And beware, in your operating, of haemorrhage, which often happens; meet it with styptics and dress the wound until it heals.

كأنك تنحت شيئا ليكون وسطه ناتيا^٥ شبيها بكمرة وليقع الثقب فى
الوسط على ما ينبغى ، وتحفظ عند عملك من نزف الدم فكثيرا ما
يعرض ذلك فقابله بما يقطع الدم وعالج الجرح حتى يبرأ ،

5. B, S, H, P, V, om. AM.

CHAPTER FIFTY-SIX. On pustules occurring on the prepuce and on the glans; and blackness and necrosis and adhesions between glans and prepuce.

These pustules very frequently occur in the urinary meatus and are excrescences of foul tissue. Some are malignant and some are not. The non-malignant you should seize with a fine hook and pare away until they are altogether gone; then apply to the place cotton wool soaked in Egyptian ointment; then afterwards dress with Palm ointment until healed. But when the pustules are malignant, of a dirty colour, for these you should employ the cautery after cutting and scraping them. If the pustules be on the prepuce of an uncircumcized unbeliever and there are some inside the prepuce and some outside, those that are inside should be removed first; and when they are healed over, then treat those outside. For if you deal with both at the same time you are in danger of going through the prepuce. Sometimes there occurs a blackness and necrosis in the testicles and prepuce; then you should scrape away all the black part which looks ready to go necrotic or has already necrosed. Then afterwards smear on the place honey with pounded and sifted pomegranate peel and bitter vetch. Then carry on with the usual treatment until healed. If haemorrhage set in, cauterize with a lunate cautery figured thus (fig. 131). For the cautery serves a twofold

BOOK TWO. CHAPTER FIFTY-SIX

Paulus Aegineta (vi. 58) contributes as usual most of the matter on the subject in this chapter, penile warts. The lunate cauterics recommended are small models of those used for hernia (see Book 1. 45) except that the shaft in these drawings (fig. 131) is bent at right angles near the head.

الفصل السادس والخمسون في البشر الذي يعرض في الغلغة والكمره
والسواد والفساد والتصاق الغلغة بالكمره

كثيرا ما يعرض هذا البشر في الإحليل وهو نتو لحمي سمج ويكون
 منه خبيث وغير خبيث، فالغير خبيث ينبغي أن تعلقه بصنارة لطيفة
 5 وتقطعه حتى تنقيه كله ثم تحمل عليه قطنه مغموسة في المرهم المصري
 ثم تعالجه بعد ذلك بالمرهم النخلتي حتى يبرأ، وأما إن كان البشر
 خبيثا سمج اللون فينبغي أن تستعمل فيه الكتي بعد قطعه وجرده،
 فإن كان البشر في غلغة عالج لم يختن وكان بعض البشر من داخل
 الغلغة وبعضه من خارج فينبغي أن تنتزع البشر الذي من داخل أولا
 10 حتى اذا اندمل فحينئذ تعالجه من خارج لأنك متى عالجتها معا
 لم تأمن الغلغة أن تنثقب، وقد يعرض أيضا في الأنشيين وفي الغلغة
 سواد وفساد فينبغي أن تقور جميع ما قد اسودّ وهم أن يفسد او قد
 فسد ثم الطخ عليه بعد ذلك العسل مع قشور الرمان المدقوق
 المنخول والكرسنة ثم تعالجه بسائر العلاج حتى يبرأ، فإن عرض
 15 نرف دم فاستعمل الكتي بمكواة هلالية على هذه الصورة:

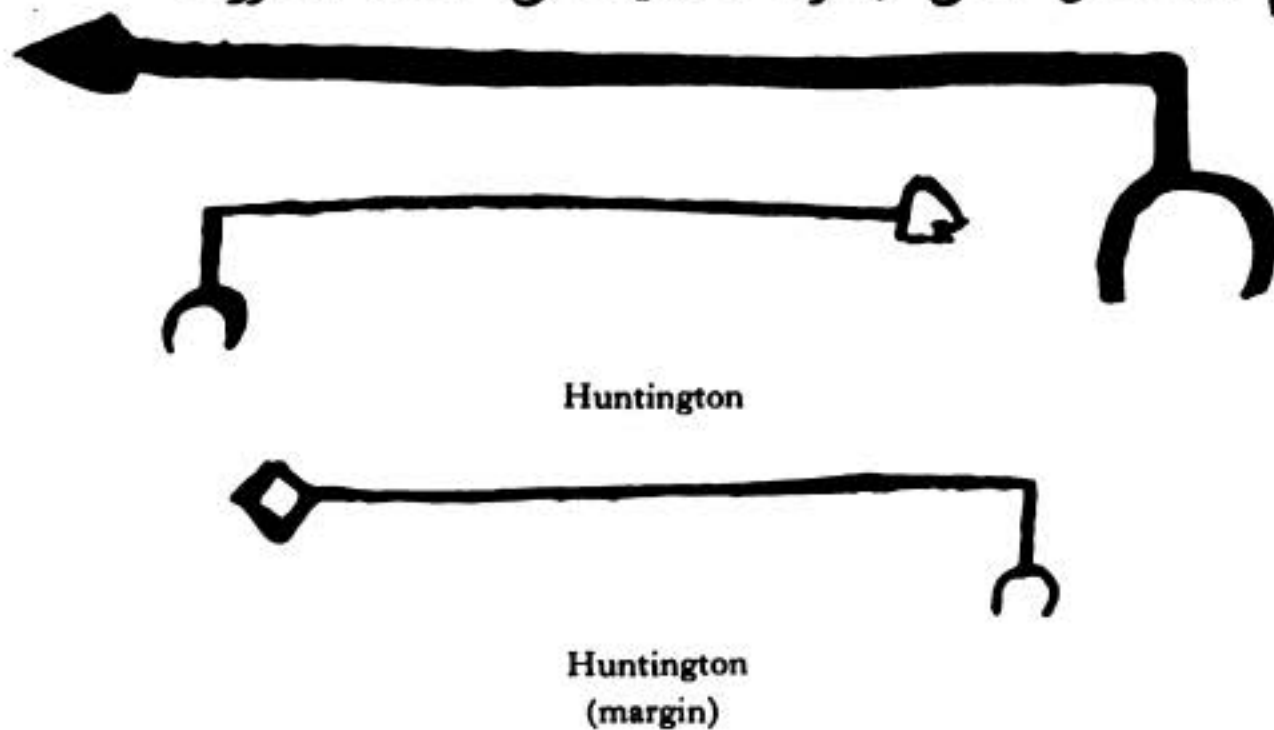


Fig. 131

purpose, namely against haemorrhage and for a putrefying wound. If at any time the penis mortifies and goes entirely, you should pass into the urethra a leaden cannula so that the patient can make water.

As to the adhesion of the glans to the prepuce (which occurs in him who has his prepuce intact, being under no obligation to be circumcized; sometimes too adhesion may occur by reason of a wound or an abscess) you should scrape it with a flat-nosed scalpel until the adhesion is divided and the glans penis is freed all round from the prepuce. But if the complete separation of the two be difficult then you should dissect away a little of the glans and of the prepuce; for the prepuce is thin, and consequently it is often pierced quickly. Separate then between the glans and the prepuce with a piece of fine linen dipped in cold water¹ to prevent further adhesions. Then let it be dressed with some styptic wine till it heals over.

¹ M reads 'rose-water'.

فإن الكى نافع للحالتين جميعا أعنى نزف الدم والجرح اذا فسد،
 فإن تأكلت الكمرة وذهبت بأسرها فى وقت ما فينبغى أن تدخل فى
 مجرى الذكر أنبوا من رصاص لبيول العليل عليه،
 وأما التصاق الغلفة بالكمرة وهذا الالتصاق إنما يحدث فيمن كانت
 20 غلفته صحيحة ولم يجب عليه اختتان وقد يعرض التصاقها من قبل جرح
 أو ورم فينبغى أن تسلخها بمبضع أفطس حتى ينحل الرباط وتتخلص
 الكمرة من كل جهة، فإن عسر تمييزها على الاستقصاء فينبغى أن
 تسلخ شيئا من الكمرة ومن الغلفة وذلك أن الغلفة رقيقة فرما انثقت
 لرقتها¹ سريعا، ثم فرق بين الغلفة والكمرة بخرقة كتان رقيقة قد بلت
 25 فى ماء بارد² لئلا تلتصق أيضا ثم يعالج بشراب قابض حتى تندمل،

M. ورد 2. H. لوقتها، V. لرقها 1.

CHAPTER FIFTY-SEVEN. On the circumcision of boys; and the correction of their erroneous treatment.

Circumcision is nothing but a solution of continuity like other wounds: but as it is a result of our deliberate action, and as it is done particularly to boys, we should plan in this case the very best operation, and the easiest way that leads to safety. Now the Ancients made no mention of circumcision in any of their books, since it was not practised in their religion; but it is something we have acquired by experience. I have myself seen the common run of practitioners and barbers carry it out with razor and with scissors; they use a spindle-whorl, a ligature of thread, and incision by means of the finger-nail. I have personally tried all these ways and have not found a better than circumcision with scissors and a thread ligature. For circumcision carried out with the razor is often eluded by the skin; for the skin of the prepuce is of two layers; and often the outer skin is incised and the inner is left intact, so that a second incision is needed, and renewed pain; while when the circumcision is done with a spindle-whorl you are in danger of cutting the tip of the penis, since the tip often goes into the aperture of the whorl.¹ As for circumcision by the finger-nail, the nail will often slip off the skin and your operation be spoilt; or the boy's foreskin may be naturally short, for many are born thus, not needing circumcision. I have seen this myself. Experience has taught me the superiority of circumcision with the scissors and the thread ligature. For scissors cut evenly, since the upper edge of the scissors is exactly the same as the lower edge; and so, as you compress your hand, thanks to the correspondence of the two blades you cut equally and simultaneously; and you make the girdle of the thread like a wall all round the skin of the tip of the penis; thus no error can occur.

¹ The nature of the technique here referred to is not clear. The word *falka*, here translated 'spindle-whorl', is also applied to other round objects, ranging from thimbles to vertebral discs.

BOOK TWO. CHAPTER FIFTY-SEVEN

Circumcision, although mentioned by the Ancient authors, for example Celsus (vii. 25), is not really described by them. Albucasis begins by mentioning the instruments used by the common barber-surgeons of the day. Among them he mentions the razor (موسى—*mūsā*) and the spindle-whorl (فلكة—*falka*).

Then he expresses his preference for scissors for circumcizing, and gives a fine drawing of the type he favours.

مقص—*miqass*—scissors—are found in the course of operative instructions in several places, four times accompanied by illustrations. This enables us to form a clear idea

الفصل السابع والخمسون في تطهير الصبيان وعلاج ما يعرض لهم
من الخطأ*

الاختتان ليس هو بشئ غير تفرق الاتصال كسائر الجراحات إلا
أنه لما كان من فعلنا بإرادتنا واستعماله في الصبيان خاصة وجب أن
نرسم فيه العمل الأفضل والطريق الأسهل المؤدى الى السلامة، فأقول
إن الأوائل لم تذكر الاختتان في شئ من كتبها لأنه لم يكن يستعمل
في شرائعهم¹ وإنما هو ما اكتسبناه بالتجربة وذلك أنى وجدت الجمهور
من الصناع والحجامين يستعملون التطهير بالموسى والمقص يستعملون
الفلكة والرباط بالخيط والقطع بالظفر وقد جرّبت جميع هذه الوجوه فلم
أجد أفضل من التطهير بالمقص والرباط بالخيط لأن التطهير بالموسى²
كثيرا ما تلون³ له الجلدة⁴ لأن جلدة الغلفة طبقتان فرّما قطعت
الجلدة العليا وبقيت الطبقة السفلى فيضطر الى قطع آخر والم مستأنف
والتطهير بالفلكة لا يؤمن معها قطع طرف الإجليل لأنه ربما دخل في
ثقبها، وأما التطهير بالظفر فرّما فلت⁵ الجلدة⁶ وفسد عملك او كانت
جلدة الصبى قصيرة بالطبع فكثيرا ما يولدون كذلك لا يحتاجون الى
تطهير وقد رأيت ذلك، وأما التطهير بالمقص والرباط بالخيط
فالتجربة كشفت لى فضله لأن المقص متناسبة⁷ القطع من أجل أن
الشفرة التى من فوق كالشفرة التى من أسفل فمتى عصرت يدك⁷ بتناسب
الشفرتين⁷ قطعت على قياس واحد وفى زمن واحد فتصير زمام الخيط

V. لون الجلدة، M. يلون بالجلدة. 2. V. شريعهم، M. شريعتهم. 1.

6. B. متناسب. 5. AH, om. M. الحديد. 4. cett. فلتت، AV. 3.

BM. تناسبت الشفرتان، A. ساسب الشفرتين. 7. M. يدك.

The manner of operating is first to make the boy, especially if he is one who understands a little, imagine that all you are going to do is tie a ligature on the tip of the penis and leave it for another day. Then amuse him and cheer him as much as you can, according to his intelligence; then stand him upright before you, not sitting; and hide the scissors in your sleeve or under your foot and do not let the boy's eye chance upon that or any other instrument. Then with your hand take hold of the tip of the penis, blow into the foreskin, and draw it back till the glans penis is exposed; then cleanse from it all unclean matter that has collected. Then ligate the indicated place with a double ligature, and a second right round beneath; then take hold at the site of the lower ligature with thumb and forefinger, very firmly, and cut between the ligatures; then quickly push back the skin and draw out the glans penis; then let a little blood flow, for that is all the better and prevents the swelling of the tip of the penis; then wipe it with a piece of soft cloth, then sprinkle on it ashes of dried gourds (this is the best of all that I have tried) or else fine white flour, which is also good; then apply on top of the powders a piece of linen with egg-yolk cooked in rose-

of the pattern of instrument used by the Arabic surgeons. The general form is the same; the handles are of fair length and end in recurved or ring extremities like the modern ones, for finger and thumb. They also have the same screw or rivet joint that is familiar to us. The blades are of two varieties:

(a) Pointed, for ophthalmic operations, in each case described as small or fine. Illustrations of these are found in chapters 11 and 18; and in chapter 16 Albucasis suggests the removal of pterygium with scissors but does not illustrate (figs. 52 and 59 in chapters 11 and 18). In the latter case the Huntington drawing may suggest they were curved.

(b) Blunt blades. These are found only in the present chapter (fig. 132); the design seems to have had as its object the prevention of damage to the rest of the organ in snipping off the foreskin.

A third variety bearing the name *miqass* has the cutting blades set at right angles to the shaft; the design can only be properly understood by turning to the illustration (fig. 78). The Marsh drawings do not quite

bear this interpretation; but nevertheless it seems justifiable to call this, distinctively, a tonsillotome (see Comment to chapter 36).

Shears date back to the Bronze Age (Déchelette, *Manuel d'Archéologie*, II. viii, p. 1282) but as they are always accompanied by razor, mirror, and comb, they were evidently for toilet purposes; and as already stated (comment on Book II, chapter 11) scissors were not commonly used by the Ancients for surgical work. This holds good for all finds down to and including the Roman era. But Celsus speaks of cutting part of the omentum in a hernia with the *forfex* (VII. 16, 3) and Paulus says that in cases of relaxation of the scrotum Antyllus cut off the redundant skin *ψαλίδι ἐπάκμω*, i.e. with sharp-pointed shears (VI. 67). That these were shears and not true scissors is likely from the derivation of the word, which has the same meaning as arch or arched, doubtless referring to the bow-shaped spring joining the blades. Scissors for surgical purposes may therefore be attributed to the Arabs; that is, the application if not the actual invention.

20 شبه حائط⁸ لجلدة الإحليل من كل النواحي لا يقع معه خطأ البتة،
 ووجه العمل أولا أن توهم الصبي ولا سيما إن كان ممن يفهم
 قليلا أنك إنما تربط الخيط في إحليله فقط وتدعه الى يوم آخر ثم
 فرجه وسره بكل وجه يمكنك ذلك منه وما يقبله بعقله، ثم توقعه بين
 يديك منتصب القامة ولا يكون جالسا واخبا المقص في كمك او تحت
 25 قدمك لا تقع عين الصبي عليها البتة ولا على شيء من الآلات، ثم
 تدخل يدك الى إحليله وتتفخ في الجلدة وتشيلها الى فوق حتى
 يخرج رأس الإحليل ثم تنقيه مما يجتمع فيه من الوسخ ثم اربط الموضع
 المعلم بخيط مشق ثم اربط أسفل منه قليلا رابطا ثانيا. ثم تمسك
 بإبهامك والسبابة موضع الربط الأسفل إمساكا جيدا وتقطع بين
 30 الرباطين ثم ارفع الجلدة الى فوق بسرعة وأخرج رأس الإحليل ثم اترك
 الدم يجري قليلا فهو أفضل وأقل لورم الإحليل ثم تنشفه بخرقه رطبة
 ثم ذر عليه من رماد القرع اليابس المحرق فهو أفضل ما جرته او
 دقيق الحوارى فهو أيضا فاضل ثم تحمل على الذرور من فوق ففى
 خرقه فص بيضة مطبوخة فى ماء الورد مضروبة بدهن الورد الطرى

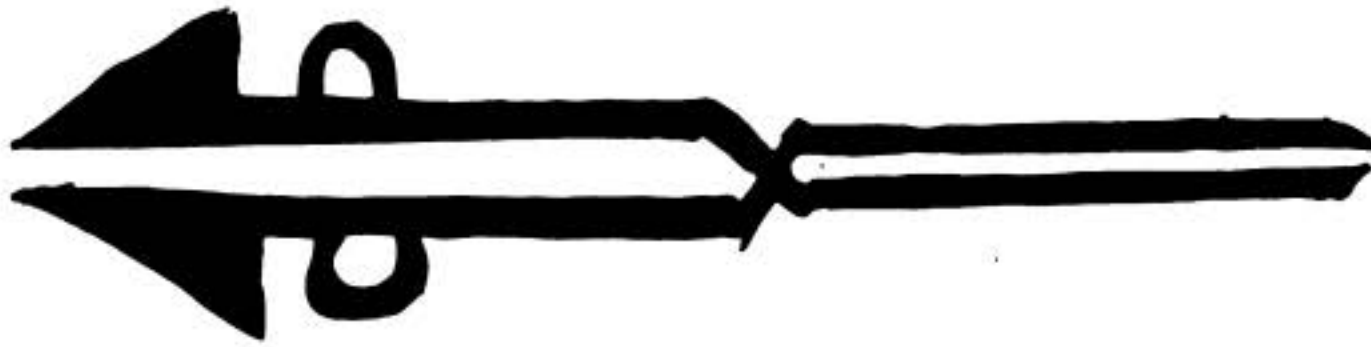
8. M, شكل ضابط cett. 9. ABS, H, تنقيه, P, تنقطه, M, تشقه, V, شنه

water, beaten up with fresh oil of roses of good quality. Leave this on the wound until the following day; then dress it in the usual way till healed. This is the type of scissors most suitable for circumcizing (fig. 132). They should be flat-nosed, sharp, with no bend in them, and with the pivot tempered; and the length of the handles should be equal to that of the blades.

Now the mistake often occurring in circumcision is for the inner layer of skin, either the whole or the part, to be inverted at the cutting. So you should at the start draw it out with your finger-nail before the place swell; then make an even incision. And if you are unable to get a hold with your finger-nail then pick it up with a hook and make your incision. If after three days there still remains some inflation and swelling of the part below the tip of the penis, let it be until the effusion subsides, and then gently peel it away and cut it as best you may. Be careful of the tip of the penis; though if any of the tip is cut away that will do no harm. And dress the wound with stimulating medicaments from among the powders that we described in the treatise on powders.¹ Should more of the skin be cut away than necessary and the skin is wrinkled up, that will do no great harm either. Continue such treatment as we have mentioned, until healed.

¹ Treatise no. 18.

35 الطَّيِّب وتتركه عليه الى يوم آخر ثم تعالجه بسائر العلاج الى أن
يبرأ، وهذه صورة المقصّ الثي¹⁰ تصلح للتطهير:



Marsh



Fig. 132

Huntington

تكون فطساء قاطعة لا عوج¹¹ فيها مسقية المسار ويكون طول
الشفرتين كطول المقبضين سواء،

وأما الخطأ الواقع في التطهير فرمّا قلبت الجلدة الداخلة كلّها
40 او بعضها عند القطع فينبغي أن تمدّها من ساعتك بظفرك قبل أن
يتورّم الموضع وتقطعها على استواء، فإن لم تستطع على إمساكها
بظفرك فاجذبها بصنارة واقطعها، فإن مضى له ثلاثة أيام وبقى ما
تحت رأس الإحليل منتفخا وارما فاتركه حتى يسكن الورم الحارّ واسلخه
برفق واقطعه على حسب ما يتهيأ لك، وتحفظ من رأس الإحليل
45 فإن قطع شيء من رأس الإحليل فإنه لا يضرّ ذلك، فعالجه بما
يلحم الجرح من الذرورات التي وصفنا في مقالة الذرورات، وإن قطع
من الجلدة فوق المقدار وتقلّصت الى فوق فلا يضرّ ذلك أيضا كثير
مضرة، فعالجه بما ذكرنا حتى يبرأ،

10. S, cett. الذي 11. BMV, cett. خرج

CHAPTER FIFTY-EIGHT. On the treatment of retention of urine.

Retention of the urine is caused by an obstruction, from a stone or a clot of blood or pus or a fleshy tumour, or similar cause. When you have carried out treatment in the ways we have prescribed in their place and the urine is not released; and when you see that it is held back by a stone sticking in the neck of the bladder, then you should have the patient down on his knees, squatting; then mount a man on his back to press his abdomen against his back; and let the patient himself hold his breath as tightly as possible; for then pressure will be put on the neck of the bladder to force the stone back and liberate the urine. But if these measures do not free it and the matter is very urgent with the patient, then you should attempt to bring it out with the instrument called a catheter, of which this is the figure (fig. 133). It is made of silver, slender and smooth and hollow like the quill of a bird's feather; as slender as a probe; about a span and a half in length; and with a tiny funnel at the end. This is the manner in which you draw off the urine through it: take a double thread and with a strong knot tie a little wool or cotton on the end, introduce the end of the thread

BOOK TWO. CHAPTER FIFTY-EIGHT

The catheter has an ancient history. According to Galen (*Medicus* 13) the name *catheter* was first given by Erasistratus, a Greek of Keos, who gained a reputation at the court of Seleucus Nicator at the beginning of the third century B.C. Galen himself (*Medicus* 13 and 19) describes the instrument as being S-shaped, and passed into the bladder with a thread running through it having a tuft of wool at the end. Paulus (VI. 59) follows this exactly as do other authors. Several extant catheters of classical times confirm this description, especially some examples in the Naples Museum (J. Stewart Milne,

Surgical Instruments in Greek and Roman Times, plate 45). The thread and wool plug of course are gone.

Albucasis uses the Greek word directly transcribed, كَاثَيْطِر = *καθετήρ*, and gives a description of it and its use close to that of the classical writers; but surprisingly he does not refer to its S-shape; and his drawing (fig. 133) shows it as quite straight with a funnel-like expansion at the near end; and the Marsh figure shows also the thread and wool plug. The latter, he says, fills the lumen of the catheter, 'like a *xirr*' (tassel, stud, button).

الفصل الثامن والخمسون فى علاج البول المحتبس فى المثانة
 البول المحتبس فى المثانة يكون عن سدّه من حصاة او دم جامد
 او قيح او لحم نابت ونحو ذلك، فإذا عالجته ذلك بما ذكرنا من
 ضروب العلاج الموصوف فى التقسيم ولم ينطلق البول ورأيت أن
 5 احتباسه من قبل حصاة قد ضارت فى عنق المثانة فينبغى أن تصير
 العليل على ركبتيه جاثيا ثم يركب رجل على ظهره ويمد بطنه الى
 ظهره و يمسك العليل نفسه ما أمكه فيضطر حينئذ عنق المثانة الى
 دفع الحصاة الى خلف فينطلق البول، فإن لم ينطلق بما ذكرنا
 واشتد الأمر على العليل فينبغى أن تستعمل إخراجة بالآلة التى
 10 تسمى قاثاير التى هذه صورتها :

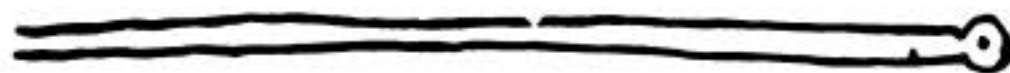
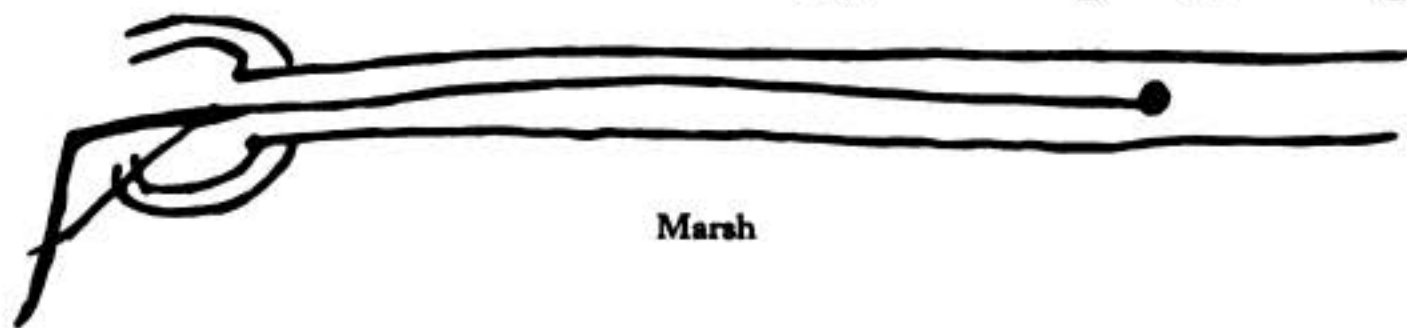


Fig. 133

Huntington

تصنع من فضة وتكون رقيقة ملساء مجوفة كأنبوب ريش الطير فى رقّة
 الميل طويلة فى نحو شبر ونصف لها قمع لطيف فى رأسها، ووجه
 جذب البول بها أن تأخذ خيطا مشنبا وتربط فى طرفه صوفة أو قطنة
 ربطا جيّدا وتدخل طرف الخيط فى أسفل القاثاير وتقرض بمقرض

A. (وهى كاسرور فى الاصل وتفسيره زراقة). 2. AHM. رجلا P, رجله 1.

into the lower end of the catheter, and trim off with scissors any superfluous wool, so that it will go into the tube and close it like a tassel. Then smear the catheter with oil or butter or egg-white. Make the patient sit down; then anoint the bladder and the meatus of the penis with humid oils or with olive-oil and warm water. Then gently introduce the catheter into the urethra until it reaches the root of the urethra. Then turn the end of the penis upward toward the umbilicus; then push the catheter inwards until the curve of the catheter ends, and push the catheter in until it reaches nearly to the seat. Then turn the penis down, with the catheter in it, and push until it reaches the bladder, and the patient now feels that it has entered a hollow. The reason why the operation is done in this manner is that the passage by which the urine is excreted is curved. Then withdraw rather firmly the thread with the wool plug attached, for the urine follows the wool; then pull it right out and the urine will pour out. Apply the catheter again and again until the bladder is emptied and the patient finds relief.

15 إن فضل شيء من الصوفة لكي تدخل في الأنبوب³ تسده⁴ كالزرة، ثم
 تدهن القاطير بزيت أو بزيد أو بياض البيض وتجلس العليل على
 كرسي وتنطل مشانته وإحليله بالأدهان الرطبة أو الزيت والماء الفاتر،
 ثم تدخل القاطير في الإحليل برفق حتى يصل إلى أصل الإحليل
 ثم تشق الإحليل إلى فوق إلى ناحية السرة⁵ ثم تدفع القاطير⁵ في
 20 داخله حتى إذا تم تشق الإحليل ثم تدفع القاطير⁵ إلى داخل
 حتى إذا وصل قريبا من المقعدة تميل الذكر إلى أسفل والقاطير
 في داخله ثم تدفعه حتى يصل إلى المثانة ويحس به العليل قد
 وصل إلى شيء فارغ وإنما يصنع على هذه الرتبة لأن المجرى الذي
 يسلك فيه البول فيه تعوج، ثم تمد الخيط بالصوفة بشدة قليلا فإن
 25 البول يتبع الصوفة، ثم تخرجها ويهرق البول، وتعيد القاطير فلا
 تزال تفعل ذلك حتى تتفرغ المثانة ويجد العليل خفة،

3. ABV. الانبوبة. 4. S, تشده HM, بشدة cett. 5. M, om. cett.

CHAPTER FIFTY-NINE. On the manner of irrigating the bladder with a syringe, and the forms of the instruments that serve for that.

When there occurs an ulcer in the bladder, or there is a clot of blood or a deposit of pus in it, and you wish to instil into it lotions and medicaments, this is done with the help of an instrument called a syringe (fig. 134). It is made of silver or ivory, hollow, with a long fine tube, fine as a probe; entirely hollow except for the end, which is solid with three holes in it: two on one side and one on the other, as you see. The hollow part containing the plunger is exactly of a size to be closed by it, so that any liquid is drawn up with it when you pull it up; and when you press it down it is driven in a jet, as is done by the projector whereby naphtha is thrown in naval battles. So when you wish to inject fluid into the bladder, dip the end of the syringe

BOOK TWO. CHAPTER FIFTY-NINE

This chapter on irrigation of the bladder is both more comprehensive than any classical description and of the utmost original value. Previous writers such as Celsus (VII. 26) and Paulus (VI. 59) merely give a few lines or a paragraph; but Albucasis devotes a whole chapter, with splendid illustrations, to the subject of syringes and other instruments for irrigation. Two words are used for instruments for both irrigation and aspiration, both found in this chapter:

زراعة—*zarrāqa*—siphon or syringe. The word originally meant 'shooter' or 'projector'. It is not indeed found elsewhere in this work, but is likened, lower in this chapter, to the *naddāḥa* for casting Greek fire. That shown here, in the margin of the Huntington MS. (fig. 134*b*), is a plain syringe in the present acceptance of the term, consisting of a straight cylindrical barrel continuous with a long narrow nozzle; and, within, a piston and handle all in one piece. In the Marsh MS. we get presumably the same idea, but the plunger is spherical and runs in a long narrow tube whose upper end serves as a barrel, while the lower forms the nozzle. The shortness of the handle on the plunger (fig. 134*a*) is perplexing. The second Huntington drawing (fig. 134*c*), a little trefoil-shaped figure, seems to be a tiny bladder-clyster.

محقن—*miḥqan*—syringe, more properly so than the first, is the word used alternatively with the first for both bladder clyster for vesical irrigation here, and for rectal irrigation

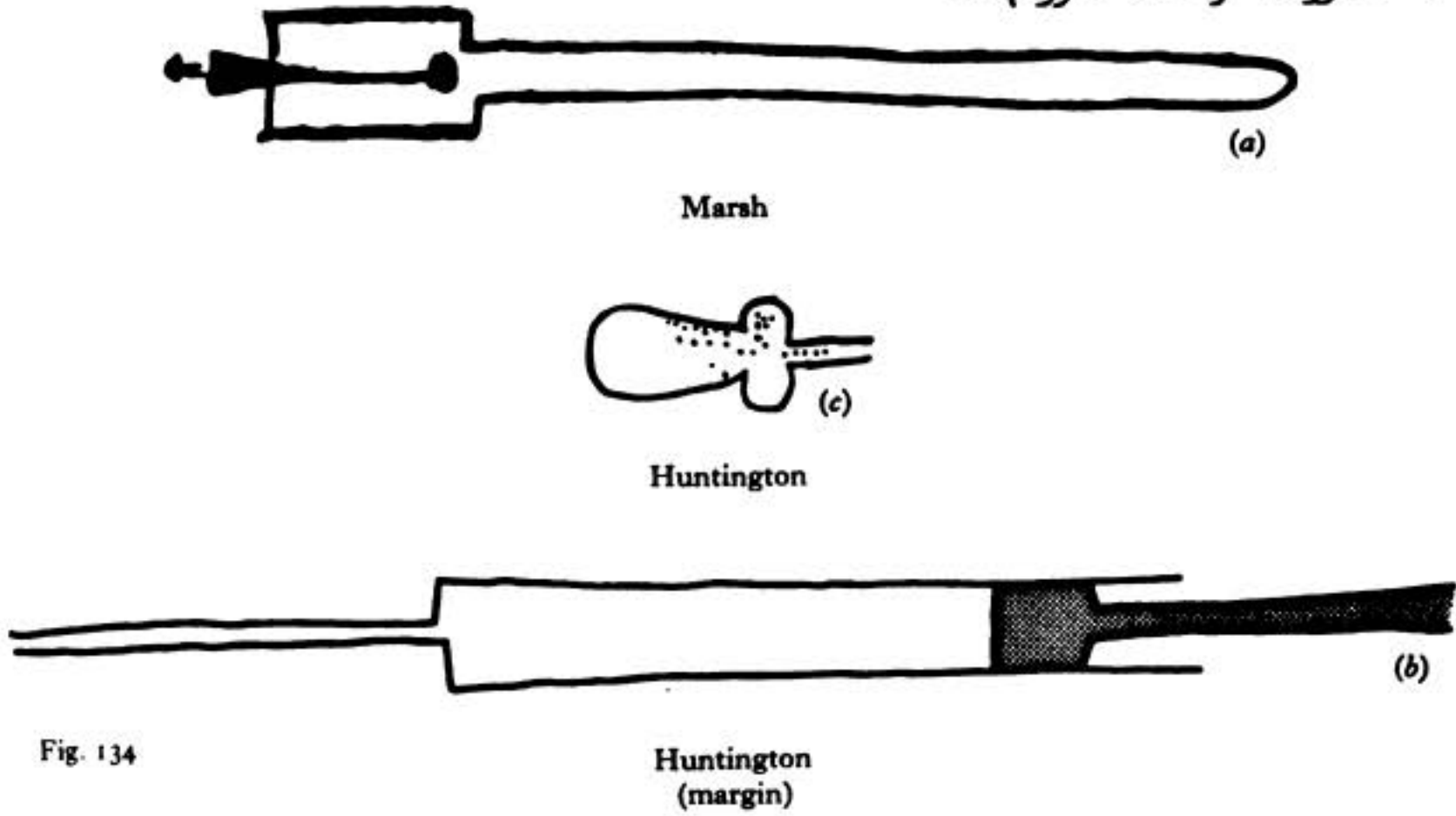
in chapter 83. This latter (fig. 135), not shown in the Marsh MS., seems to be only the metal part, a tube or nozzle with two expansions at one end forming a groove in which the ligament binding the bladder on to it might get a firm hold and not slip off when pressure was applied. The bladder or skin is not shown here, but is found, with figures also of the metal part, illustrated in both MSS. in chapter 83 (figs. 155 and 156). Both nozzle (of the same design) and bladder are demonstrated all tied together to form the complete clyster (fig. 157). And the same device is given also in chapter 88 for irrigating sinuses.

This section should also include instruments, not strictly syringes but used for purposes of a similar order:

انبوبة—*anbūba*—cannula. This has been already described and illustrated in chapter 6. The word denotes a plain tube, in some cases a drainage tube. In chapter 6 such a one is shown for aspirating the ear (fig. 48); and another (fig. 49) is a distinct variety with what seems to be a kind of plunger or piston. The Arabic word for this interesting item within the lumen of the cylinder is مدفع—*midfa'*, meaning a pusher or thruster, which is the same word used of the instrument called a thruster in chapter 77 (fig. 143); it could therefore convey the idea of a piston. This same plain cannula was also used for the drainage of ascites (chapter 54—figs. 128 and 129) and even for boring out warts (chapter 82—fig. 154).

الفصل التاسع والخمسون كيف تحقن المثانة بالزرقاة وصور الآلات
التي تصلح لذلك

إذا عرض في المثانة قرحة أو جعد فيها دم أو احتقن فيها
قيح وأردت أن تقطر فيها المياه والأدوية فيكون ذلك بآلة تسمى
5 الزرقاة وهذه صورتها :



تصنع من فضة أو من عاج¹ مجوفة لها أنبوبة طويلة على رقعة
الميل مجوفة كلها إلا الطرف فإنه مصمت فيه ثلاث ثقب اثنتان من
جهة وواحدة من جهة أخرى كما ترى والموضع الأجوف الذي فيه
المدفع يكون على قدر ما يسدّه بلا مزيد حتى إذا جذبت به شيئاً
10 من الرطوبات انجذبت وإذا دفعت به اندفعت إلى بعد على ما
تصنع النضاجة التي يرمى بها النفط في حروب البحر، فإذا أردت
طرح الرطوبات في المثانة أدخلت طرف الزرقاة في الرطوبة وجذبت

1. HM. نحاس.

into the fluid and draw up the piston, for the fluid will be drawn up into the cavity of the syringe. Then introduce the end into the urethra as we described for catheterization; then expel the fluid by means of the piston; the fluid will immediately flow into the bladder and the patient will have a sense of its entry.¹ This is the illustration of a fine clyster also for irrigation of the bladder (fig. 135). It is made of silver or white copper. The upper part of it is like a small funnel and beneath it is a groove where falls the thread of the ligature. Then take a camel's bladder and fill it with whatever fluid you wish to wash the bladder out with, and tie it to the syringe with a strong ligature of double thread between the two ridges. Warm the fluid a little over the fire; then introduce the end of the siphon into the end of the urinary meatus. Then apply strong pressure to the bladder containing the fluid until the patient can feel the fluid has entered his own bladder. But if you have not a bladder, then take a piece of parchment and cut out a circle; then make holes in the edge all round the circle; then pass a strong ligature through these holes all round and draw the circle in, as a bag is closed with a draw-string, first putting into it whatever fluid, oil, or water, you desire. Then tie it to the instrument and do with it as with the camel's bladder, squeezing until the fluid reaches the bladder of the patient.

¹ M omits from here to the end of the chapter.

basinos—*mus'us*—funnel for the nose, lit. 'pourer' and then specifically 'snuff-instrument'. This *infundibulum* was used, of course without pressure, for irrigating the nose. Figure 64 shows it as a metal dropper or pipette; it resembles in this drawing, as the text states, the classical lamp. Classical practice with this type of instrument was not very advanced, having gone no further than the bladder syringe or clyster of the Arabs. Hippocrates in his *De Affectionibus*, chapter 21, describes how a skin or bladder is to be tied to an *αυλίσκος* or reed; and air, in this case, to be forced into the rectum. Just such an instrument was, much later, recommended by Oribasius for nutrient enemata, and called by him *κλυστήρ*. He says that an *ωτικός κλυστήρ* could also be used for the same purpose. Further discussion on rectal or enema syringes is reserved for chapter 83. Then Galen mentions other varieties: the *μητρεγχύτης* or vaginal syringe (*Meth. Med.*, chapter 4), which seems to have no Arab counterpart. In another work (*ad Glauc.* II. 10, Kühn x. 125) he mentions the *πῦουλκός*

for irrigating and removing the discharge from sinuses. This seems to have been a straight tube with a pig's bladder attached. Hero (*de Spirit.* 57, quoted by Milne) attempts to show that this was a true aspirating syringe with a piston; but this could only be a conjecture; and it seems from his words to be rather a wide-bore form of the ordinary clyster. The *ωτικός κλυστήρ* or *ωτεγχύτης* of Paulus, already referred to, had its counterpart in the Arabian ear syringe mentioned already (chapter 6, fig. 49). Finally there was the bladder syringe called by the Ancients the *εὐθύτητος καθετήρ*, which is the subject of this chapter now under review.

The British Museum has a beautiful example of a Roman force-pump, very likely for pumping domestic water supplies. This is proof that the Ancients were familiar with the piston and cylinder. But there is little evidence of their having applied this principle to surgical ends. The Huntington MS. figure 134B shows clearly that the Arab surgeons certainly had such a device.

بالمدفع الى فوق فإن الرطوبة تنجذب في جوف الزرّاقة ثم تدخل
طرفها في الإحليل على حسب ما وصفنا في القاطير ثم تدفع
الرطوبة بالمدفع فإن تلك الرطوبة تصل الى المثانة على المقام حتى
يحسّ بها العليل، وهذه صورة محقن لطيف أيضا تحقن به
المثانة:



Fig. 135

Marsh

تصنع من فضة او اسبادروية رأسها الأعلى يشبه القمع الصغير
وتحتة حز² يقع فيه³ الرباط، ثم تأخذ مثانة جمل وتضع فيها
الرطوبة التي تريد أن تحقن بها المثانة ثم تربطها بين الحجرين⁴
ربطاً وثيقاً بخيط مشق وتدفئ تلك الرطوبة قليلاً على النار ثم تدخل
طرف المحقن في الإحليل ثم تشدّ يدك على المثانة بالرطوبة شدة
محكما حتى يحسّ العليل أن تلك الرطوبة قد وصلت الى المثانة،
فإن لم تحضرك مثانة⁵ فخذ⁶ قطعة رق⁶ فاصنع منها دائرة وثقبها من
جميع دورها ثم أدخل خيطاً وثيقاً في تلك الثقب كما تدور ثم اجمع
الدائرة كما تجمع السفرة⁷ بعد أن تضع فيها ما تريد من الرطوبات
والأدهان والمياه ثم اربطها في الآلة واصنع بها كما صنعت بالمثانة
من عصر يدك حتى تصل الرطوبة الى المثانة،

2. B, الحرين. 3. A, سه. P, بينه وبين. 4. cett. حجر B.

5. P, زقا. H, قطعة زق. 6. B, <جمل>. 7. cett. الحجرين V, الحجرين.

ABH. الصفرة. 7.

CHAPTER SIXTY. On the extraction of the stone.

We have already in the due place reviewed the different kinds of stone and the medical treatment of them. I mentioned too the difference between stones arising in the kidney and those arising in the bladder, and gave all the symptoms of them. I also mentioned the kind of stone to which manipulation and incision are appropriate. This is in particular the stone arising in the bladder, and the sort impacted in the urethra. I shall now give a short description of this with a clear explanation and summary.

Now I say that a vesical calculus most frequently occurs in boys. Among the symptoms is that the urine passed out of the bladder is of a thin consistency like water, and sand¹ appears in it; and the patient keeps on rubbing and playing with his penis; and often it hangs flaccid and then is erected; at the same time many of them get a prolapse of the rectum. The cure of boys under the age of fourteen years is easy; but the treatment of old people is difficult; and that of young men midway between the two. And the larger the stone the easier the cure; with a small stone the cure is otherwise. When we undertake treatment the patient must first have an enema to empty his bowel completely; for sometimes the faeces prevent the calculus being found when it is looked for. Then the patient should be taken by the feet and jarred to and fro and shaken downwards to bring the calculus down into the neck of the bladder; or else let him jump down from a height a number of times. Then have him sit down upright before you with his hands beneath his thighs, to make the whole bladder incline downwards. Then examine him and palpate him externally. If you feel the stone in the empty place, immediately hasten and cut down upon it. But if there is not the slightest sign of it to the touch then you should anoint with oil the forefinger of your left hand if it be a boy, or the middle finger

¹ M reads 'blood'.

BOOK TWO. CHAPTER SIXTY

Lithotomy was a procedure of much importance and frequent practice among the Ancients; and this chapter is evidence of its place among the Arab surgeons, and also of the actual first-hand knowledge of the subject possessed by the writer.

The existence of surgeons specializing in cutting for stone is attested as far back as

Hippocrates. The well-known oath includes a paragraph promising to abstain from using the knife, even for stone, but to leave it to those practised in it. Ammonius of Alexandria (in Celsus VII. 26, 3) devised an instrument for dealing with a stone too large for the ordinary incision, which is described thus by Celsus: *Si quando autem is maior non videtur*

الفصل الستون في إخراج الحصاة

قد ذكرنا في التقسيم أنواع الحصاة وعلاجها بالأدوية وذكرنا الفرق بين الحصاة المتولدة في الكلى وبين الحصاة المتولدة في المثانة¹ وعلامات ذلك كله وذكرنا الحصاة التي يقع فيها العمل باليد والشفق² وهي الحصاة المتولدة في المثانة خاصة والتي تنشب في الإحليل وأنا واصل ذلك بشرح بين واختصار،

فأقول إن الحصاة المتولدة في المثانة أكثر ما تعرض للمصابين ومن علاماتها أن البول يخرج من المثانة شبيها بالماء في رفته ويظهر فيه الرمل³ ويحك ذكره ويعيث به وكثيرا ما يتدلى ثم ينتشر وتبرز معها القعدة في كثير منهم، ويسهل بروز المصابين منها إلى أن يبلغوا أربع عشرة سنة ويعسر في الشيوخ وأما الشبان فتوسط فيما بين ذلك والذي يكون حصاته أعظم يكون علاجه أسهل والصغيرة بحد ذلك،

فإذا صرنا إلى العلاج فينبغي ألا أن يحقن الحليل بحقنة تخرج⁴ جميع الزبل الذي في معائه فإنه قد يمنع وجود الحصاة عند التفثيش⁵ ثم يؤخذ الحليل برجليه فينفخ ويهز إلى أسفل لتزل الحصاة إلى

عنق المثانة أو يثب من موضع مرتفع مرآت ثم تجلسه بين يديك منتصبا⁶ ويدها تحت فخذه⁷ لتصير المثانة كلها مائلة إلى أسفل ثم تغتشه وتجسه من خارج فإن أحسست بالحصاة في الفضاء فبادر من ساعتك بالشفق عليها فإن لم تقع تحت لمسك البتة فينبغي أن تسح الأصبع السبابة بالدهن من اليد اليسرى إن كان الحليل صيبا أو الأصبع

1. M. الدم. 2. AH. من 3. B, تحت افخازه, cett. ويديه تحت افخازه, 4. AH. من 5. B, تحت افخازه, cett. ويديه تحت افخازه, 6. AH. من 7. B, تحت افخازه, cett. ويديه تحت افخازه,

if it be a fully grown young man, and introduce it into the anus and search around for the calculus, until, when it comes under the finger, you can work it slowly towards the neck of the bladder. Then press upon it with your finger and push it outwards toward the place where you wish to make your incision. And bid an assistant squeeze the bladder with his hand; and bid another assistant raise the scrotum with his left hand and with the other hand stretch the skin under the testicles away from the place where the incision is going to be. Then do you take a lancet like this (fig. 136) and make your incision in the space between the anus and the testicles, not in the mid-line but on the side of the left buttock; and cut down upon the calculus itself, keeping your finger in the anus and pressing it outwards. The incision should be oblique, wide externally and narrowing inwards down to dimensions allowing the exit of the stone, not larger. Now you may press with the finger that is in the anus upon the stone as you make the incision, and it comes out without difficulty.

You should know that sometimes there are stones which have angles and edges, on which account their extraction is difficult. Some are smooth like acorns and rounded, and these come out easily. But in those cases

*nisi rupta cervice extrahi posse, findendus est, cuius repertor Hammonius, ob id, Lithotomus cognominatus est. Id hoc modo fit: uncus inicitur calculo sic, ut facile eum concussum quoque teneat . . . tum ferramentum adhibetur crassitudinis modicae, prima parte tenui sed retusa; quod admotum calculo ex altera parte ictu eum findit, magna cura habita, ne aut ad ipsam vesicam ferramentum perveniat, aut calculi fractura ne quid incidat—‘a scoop is applied to the calculus and then an instrument is applied which is of moderate thickness, tapering at the tip but blunted; which, driven against the stone on the other side, splits it with a blow’. This clearly shows the tool to have been a kind of cold chisel which was used to split the stone while it was being held firm in the scoop (uncus). The scoop itself was described also for the first time by Celsus (loc. cit. para. 2): *Is [i.e. uncus] est ad extremum tenuis, in semicirculi speciem retusae latitudinis, ab exteriori parte levis, qua corpori iungitur, ab interiori asper, qua calculus attingit isque longior potius esse debet; nam brevis extrahendi vim non habet—‘the scoop is thin at its extremity, bent round in**

the shape of a semicircle; smooth outside where it is in contact with the tissues; inside, where it touches the stone, roughened. It should be rather long, for a short instrument does not give leverage for extracting.’ This gives the picture of a broad spoon or scoop with a long handle; the bowl of the spoon being roughened on the inside to give a grip on the stone.

In a case where there is a stone sticking in the urethra Celsus suggests the use of a *specillum auricularium*—an ear-scoop—for fetching it out via the meatus (loc. cit., para. 1). Celsus also used and described the knife designed for the actual lithotomy incision by Meges of Sidon (first century A.D.). *Meges, quoniam is [i.e. scalpellum] infirmior est potestque . . . super illa corpore qua cavum subest, non secare . . . ferramentum fecit rectum, in summa parte labrosum, in ima semicirculatum acutumque. Id receptum inter duos digitos . . . super pollice inposito sic deprimebat. . . . Quo consequbatur ut semel quantum satis esset, aperiret* (VII. 26. 2)—‘Since this (ordinary scalpel) is too weak and might fail to cut where there is a hollow

الوسطى إن كان غلاما تاما فتدخلها في مقعدته وتفتش عن⁴ الحصاة حتى اذا وقعت تحت أصبعك نقلتها قليلا قليلا الى عنق المثانة ثم تكبس عليها بأصبعك وتدفعها الى خارج نحو المكان الذى تريد شقه وتأمرا خادما أن يعصر المثانة بيده وتأمرا خادما آخر أن يمد⁵ بيده اليمنى الأنشيين الى فوق وبيده الأخرى يمد⁶ الجلد الذى تحت الأنشيين ناحية عن الموضع الذى يكون الشق فيه، ثم تأخذ الموضع النشل الذى هذه صورته:

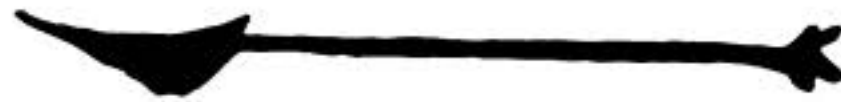
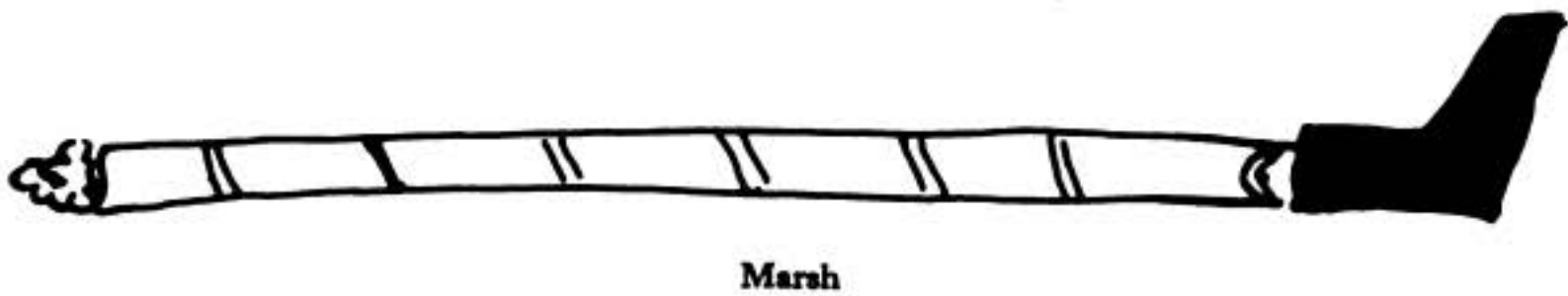


Fig. 136

Huntington

وتشق فيما بين المقعدة والأنشيين لا في الوسط بل الى جانب الألية اليسرى ويكون الشق على نفس الحصاة وأصبعك في المقعدة وأنت تضغطها الى خارج مورا⁵ ليكون⁶ الشق من خارج واسعا ومن داخل ضيقا على قدر ما يمكن خروج الحصاة منه لا أكبر فرتما⁷ ضغطت الأصبع التى في المقعدة الحصاة عند الشق فتخرج من غير عسر⁸

واعلم أنه قد يكون من الحصاة ما لها زوايا وحروف فيعسر⁹ خروجها لذلك ومنها ملساء¹⁰ تشبه البلوط ومدحرجة فيسهل خروجها،

P. ليلا يكون. 6. P. مواربا، M. موزونا. 5. ABP. على. 4.

where the stone is rough and angular you should slightly increase the incision. Then if it still will not come out you must then resort to a device—namely to catch hold of it with strong forceps having an extremity like a rasp, to get a tight hold of it so it shall not slip out; or else introduce beneath it a narrow instrument with a crooked end. And if you then cannot get the stone out, widen the incision slightly; and if there is any bleeding stanch it with vitriol. If there should be a number of stones first push the largest of them into the neck of the bladder, then cut down upon it; then push a smaller one down after it; and do the same if there be more than two. But if the stone be very large it is foolish to make a great incision down upon it; for the result is that the patient either dies or has a chronic urinary fistula because the place will not heal at all. Try rather to manipulate it so that it protrudes; or else attempt to break it up with the forceps so that you can extract it piecemeal. And when you have completed the operation pack the wound with frankincense and aloes and dragon's blood, and bind it up and apply a pad soaked in olive oil and wine or oil of roses and cold water, to reduce the swelling. The patient should lie flat on his back and the bindings should not be undone before the third day; and when they are undone foment the place with plenty of oil and water. Then dress it with Palm ointment and basilicon ointment until it heals. If an increasing and cankerous abscess occur in the wound, or anything similar such as clotting of blood within the bladder, with stoppage of the urine (which would be signified by the urine being accompanied by blood) pass your finger into the wound and remove the blood; for if it lies in it it will lead to sepsis and necrosis of the bladder. Then wash out the wound with vinegar and water and salt, and apply whatever treatment is suitable for the case

beneath, Meges made a knife that was straight, with a lipped top edge and a sharp semicircular lower edge. This he took between two fingers, put his thumb on the top and pressed it down thus; the result being that at one stroke he made an opening of sufficient size.' Although Gurlt remarks that *man kann sich danach von ihm durchaus keine rechte Vorstellung machen*, it seems fair to deduce from the description that the blade was straight and broad-edged along the top to take the pressure of the thumb; and below, very sharp, and semicircular so that simple pressure, as opposed to the usual stroke of an

incision, would give an opening of standard breadth for the extraction. This is presumably the instrument Paulus had in mind when referring to the *λιθοτόμος*. The same author also speaks of the *λιθουλκός* which is almost certainly the same as the *uncus* or scoop already described by Celsus. The word is derived from *ἐλκω*—to draw or drag out; used also of quarrying stones. So that it is not likely that Paulus was designating something of the forceps type as some commentators have imagined. Paulus therefore closely followed Celsus and was in turn almost word for word transcribed by Albucasis. So that it

فما كان منها لها زوايا وحروف فتزيد في الشق قليلا فإن لم تخرج
 هكذا فينبغي أن تتحیل عليها إثمًا أن تقبض عليها بجفت محكم يكون
 طرفه كالمبرد⁷ ليضبط على الحصة فلا تغلت منه وإثمًا أن تدخل من
 تحتها آلة لطيفة معققة الطرف، فإن لم تستطع عليها فوسع الشق⁸
 40 قليلا فإن غلبك شيء من الدم فاقطعه بالزاج، فإن كانت أكثر من
 واحدة فادفع أولا الكبيرة الى فم المثانة ثم شق عليها ثم ادفع
 الصغيرة بعد ذلك وكذلك تفعل إن كانت أكثر من اثنتين، فإن
 كانت عظيمة جدًا فإنه جهل أن يشق عليها شقا عظيما لأنه يعرض
 للعليل أحد أمرين إثمًا أن يموت وإثمًا أن يحدث له تقطير البول دائما
 45 من أجل أنه لا يلتحم الموضع البتة ولكن حاول دفعها حتى تخرج
 أو تحیل في كسرهما بالكلايب حتى تخرجها قطعا، فإذا فرغت من
 عملك فاحش الجرح بكندر وصبر وشيان وشده وصير فوقه خرقا مبلولة
 بزيت وشراب أو بدهن ورد وما بارد ليسكن الورم الحار ثم يستلقى
 العليل على قفاه ولا تحل الرباط الى اليوم الثالث فإذا انحل نطلت
 50 الموضع بما، وزيت كثير ثم تعالجه بالمرهم النخلی والمرهم الباسليقون
 حتى يبرأ، فإن عرض في الجرح ورم حار زائد وأكال ونحو ذلك مثل
 أن يجمد دم في المثانة ويمتنع منه البول ويعرف ذلك من خروج
 الدم مع البول فأدخل أصبعك في الجرح وأخرج ذلك الدم فإنه إن
 بقى دعا الى فساد المثانة وعفونتها، ثم اغسل الجرح بالخل والماء
 55 والملح وقابل كل نوع بما شاكه من العلاج الى أن يبرأ، وينبغي

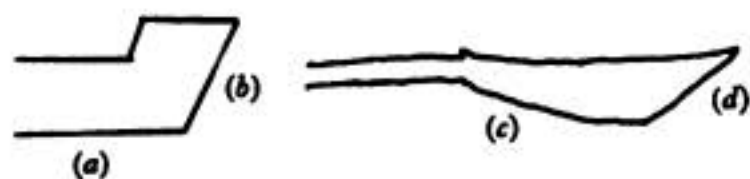
7. M. كالمروء. 8. B, cett. الثقب.

until it heals. Also at all times during treatment his hips should be bound and kept together so that the medicaments applied to the place may not be disturbed.

Now if the calculus be small and be impacted in the opening of the urinary passage, preventing the exit of the urine, treat it with the means I am about to describe before you go on to make your incision, for often I have found this treatment suffice without incision; I have experience of this. You take a drill of the finest steel, of this shape (fig. 137). It should be triangular at the point and sharp, with a wooden handle. Then take a thread and with it bind the penis beneath the calculus to prevent the stone from returning to the bladder. Then introduce the iron of the drill gently into the meatus until the drill reaches the stone itself, and then very very gently revolve the drill upon the stone with your hand, and try to perforate it, till you pierce it through to the other side. Then the urine will at once be released. Then, with your hand outside the penis, squeeze the remains of the stone, and they will crumble and be washed out by the urine and the patient will be cured. But if this treatment is not possible for you on account of some impediment, then tie a thread beneath the stone and another above; then make an incision down upon the stone in the penis itself between the two ligatures, extract it, then undo the ligature and clean away

is surprising that when it comes to the actual lithotomy knife Albucasis speaks of it as being sharp on both sides.

The lithotomy knife as drawn in the Marsh MS. (fig. 149) seems impossible to reconcile with the description of the *λιθοτόμος* as there is no provision of a lip on the top edge of the blade to take the pressure of the thumb. If, on the other hand, Albucasis intended the pressure to be applied by way of the long handle, then perhaps the two sharp sides could refer to the two angles of one edge; in the Marsh drawing, *a* and *b*; and in the Huntington, *c* and *d*.

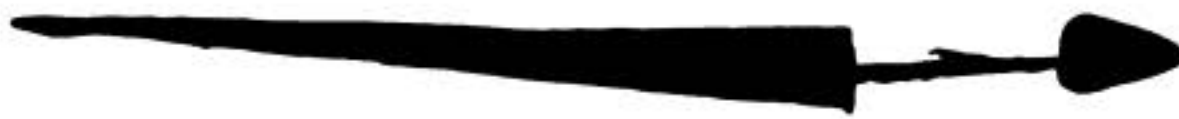


This can be no more than conjecture as Albucasis does not give any clear idea of how

his lithotomy knife should be used. Then we come to an interesting statement; namely, that if the stone does not come out by manual pressure after the incision has been made, then it is to be laid hold of with forceps (see Comment to chapter 31). This may be an advance on classical procedure which, as has been seen, only employed the scoop. Albucasis describes them as straight with roughened jaws so as to maintain a grip on the stone. As he does not illustrate them we may suppose them to be like the straight toothed forceps of chapter 30 for dental extraction. That this use of the forceps is an original idea is confirmed by the fact that he does not fail to describe also the old standby, the scoop—'a narrow instrument with a curved end'. Then Albucasis carries his originality further by the proposal to break up with the forceps an unusually large stone. This straight-toothed forceps then served if need be as a lithotrite.

فى أوقات العلاج كلها أن تربط الفخذين وتجمعهما لتثبت الأدوية
التي توضع على الموضع،

فإن كانت الحصاة صغيرة وصارت فى مجرى القضيب ونشبت فيه
وامتنع البول من الخروج فعالجها بما أنا واصف قبل أن تصير إلى
60 الشق فكثيرا ما استغنيت بهذا العلاج عن الشق فقد جرّيت ذلك
وهو أن تأخذ مشعبا من حديد الفولاذ تكون هذه صورته:



Marsh



Fig. 137

Huntington

مثلت الطرف حاد مغرز فى عود ، ثم تأخذ خيطا وتربط به
القضيب تحت الحصاة لئلا ترجع إلى المثانة ثم تدخل حديدة
المشعب فى الإحليل برفق حتى يصل المشعب إلى نفس الحصاة
65 وتدير المشعب بيدك فى نفس الحصاة قليلا قليلا وأنت تروم ثقبها
حتى تنفذها من الجهة الأخرى فإن البول ينطلق من ساعته ثم تنز
يدك على ما بقى من الحصاة من خارج القضيب فإنها تنفتت وتخرج
مع البول ويبرأ العليل ، فإن لم ينتهيا لك هذا العلاج لعائق
يعوقك عن ذلك فاربط خيطا تحت الحصاة وخيطا آخر فوق الحصاة
70 ثم تشق على الحصاة فى نفس القضيب بين الربطين ثم تخرجها ثم
تحلّ الرباط وتنقى الدم الجامد الذى صار فى الجرح ، وإنما وجب

M. وتبقى 9.

the blood that has clotted in the wound. The purpose of the ligature beneath the stone is lest it return to the bladder; and the purpose of the one above it is that when you loosen the ligature after removing the stone the skin may fall back into place so as to cover the wound. On this account, when you tie the upper ligature, you will have to raise the skin so that when you have finished operating it may go back and cover the wound as we have said.

A calculus impacted in the urethra is the final problem in this chapter. For this Albucasis describes a fine drill (fig. 137) which, using the terminology of Leroy (1820), we may call a *lithoprion*. It had a fine sharp triangular point; and a wooden handle for the purpose of rotating the instrument between the fingers. The description of the procedure with this suggests that in this drill there is the idea of the lithotrite of Gruithuizen which aroused controversy in the early part of last century. Gruithuizen and the others, including Leroy, had the notion of getting at the stone while actually within the bladder: not when impacted at some point along the

urethra. Also they introduced it along a cannula; they did not rotate it naked. This device of Albucasis, however, does seem to have been in a manner true lithotripsy many centuries earlier than the modern era and completely lost sight of and not even mentioned by the great middle-era surgeons Franco, and Paré, nor by Frère Côme, the doyen of genito-urinary surgery. Albucasis' word for this is مشعب—*mish'ab*—drill; this also occurs in chapter 19 for the instrument for drilling into the nasal cavity to divert a chronic sinus (see figs. 61 (chapter 19) and 137).

ربط الخيط تحت الحصاة لئلا ترجع الى المشانة والربط الآخر من فوق لكيما اذا حلّ الخيط بعد خروجه الحصاة يرجع الجلد الى مكانه فيغطي الجرح ولذلك ينبغي لك اذا ربطت الخيط الأعلى أن ترفع الجلد الى فوق ليرجع عند فراغك ويغطي الجرح كما قلنا ، 75

CHAPTER SIXTY-ONE. On the extraction of a stone from the female.

It is very uncommon for women to have stone. But if it should happen to a woman the treatment is indeed difficult and is hindered by a number of things. One is that the woman may be a virgin. Another is that you will not find a woman who will expose herself to a (male) doctor if she be chaste or married. A third is that you will not find a woman competent in this art, particularly not in surgery. Then a fourth is that the place for cutting upon the stone in a woman is a long way from where the stone lies, so the incision has to be deep, which is dangerous. If necessity compels you to this kind of case, you should take with you a competent woman doctor. As these are very uncommon, if you are without one then seek a eunuch doctor as a colleague, or bring a midwife experienced in women's ailments or a woman to whom you may give some instruction in this art. Have her with you and bid her do all that you enjoin; first of all, in searching for the stone. If she perceive that the woman is a virgin she should pass her finger into the anus and palpate for the stone. If she finds it and keeps her finger on it, then bid her cut down upon it. But if the patient be not a virgin bid the midwife pass her finger into the vulva and palpate for the stone, after she has placed her left hand upon the bladder and applied a good pressure. If she finds the stone she should gradually push it down from the outlet of the bladder as far as she can until it reaches the bottom of the pelvis. Then she should cut down upon it from about the middle of the pudenda near the root of the hip on whichever side she can conveniently feel it; she must keep her finger on the stone, pressing from below. The incision should start

BOOK TWO. CHAPTER SIXTY-ONE

This chapter on the extraction of a stone from the female seems to have been taken from Aetius XVI. 99; and needs no note.

الفصل الحادى والستون فى إخراج الحصة للنساء

قليلًا ما تتولد الحصة فى النساء فإن عرض لأحد منهن حصة
فإنه يعسر علاجها ويمتنع لوجوه كثيرة أحدها أن المرأة ربما كانت
بكرًا والثانية أنك لا تجد امرأة تبيع نفسها للطبيب إذا كانت غفيفة
5 أو من ذوات¹ المحارم² والثالثة أنك لا تجد امرأة تحسن هذه الصناعة
ولا سيما العمل باليد والرابعة أن موضع الشق على الحصة من النساء
بعيد من موضع الحصة فتحتاج إلى شق غائر وفى ذلك خطر، فإن
دعت الضرورة إلى ذلك فينبغى أن تتخذ امرأة طيبة محسنة وقليلًا
ما توجد فإن عدمتها فاطلب طبيبًا غفيا رفيقًا³ أو⁴ تحضر امرأة قابلة
10 محسنة فى أمر النساء أو امرأة تشير فى هذه الصناعة بعض الإشارة⁵
فتحضرها وتأمرها أن تصنع جميع ما تأمرها به من التفتيش على
الحصة أولاً وذلك أن تنظر إن كانت المرأة بكرًا فينبغى أن تدخل
الأصبع فى مقعدتها وتفتش الحصة فإن وجدتها وضغطتها تحت
أصبعها فحينئذ تأمرها بالشق عليها، فإن لم تكن بكرًا وكانت ثيبًا
15 فأمر القابلة أن تدخل أصبعها فى فرج العلية وتفتش على الحصة
بعد أن تضع يدها اليسرى على المثانة وتعصرها عصرًا جيدًا، فإن
وجدتها فينبغى أن تدرجها عن فم المثانة إلى أسفل مبلغ طاقتها
حتى تنتهى بها إلى أصل الفخذ ثم تشق عليها عند قبالة نصف الفرج
عند أصل الفخذ من أى جهة تتأتى لها وأحسّت بالحصة فى تلك
20 الناحية وأصبعها لا تنزل عن الحصة مضغطة تحتها، وليكن الشق

1. codd. ذوى. 2. AHPS. الحرم. 3. om. M. 4. om. HS.

5. codd. و. 6. AV, تحضره, BM, P. تحضر معه.

by being small; then let her introduce a sound into the small incision, and when she finds the stone then she will enlarge the incision until she knows that it is big enough for the exit of the stone.

You should know that there are many kinds of calculus: some are large and some are small; smooth and rough; long, rounded, and pronged. Learn to recognize these types and you will have an indication of what to do. If you are hindered by a haemorrhage, scatter powdered vitriol on the place and keep it there for a time until the haemorrhage has ceased, and then return to your operating until the stone is out. See also that you have ready the instruments mentioned for the extraction of stone from the male, to assist you in operating. If you are hindered by a haemorrhage and you know, by the spurting of the blood, that it comes from an artery that has been cut, then put styptic powder on the place and bind up tightly with bandages and leave it and do not come back to it; let the stone be and do not extract it, for often that loses the patient; then dress the wound. And after some days, when the acute haemorrhage¹ has subsided and suppuration has set in, return to your operating until you get the stone out.

¹ BM read 'swelling'.

صغيرا أولا ثم تدخل المروءة على ذلك الشق الصغير فإن أحسست
 بالحصة فتزيد في الشق على قدر ما تعلم أن الحصة تخرج منه،
 واعلم أن أنواع الحصة كثيرة منها صغار وكبار وملس وحرش وطوال
 ومدورة وذات شعب فأعرف أصنافها لتستدل بذلك على ما تريد، فإن
 غلبك الدم فذر في الموضع الزاج المسحوق وامسكه ساعة حتى ينقطع²⁵
 الدم ثم ارجع إلى عملك حتى تخرج الحصة، واعمل أن تعدّ مع
 نفسك من الآلات التي ذكرت في إخراج الحصة للرجال لتستعين بها
 في عملك، فإن غلبك نزف الدم وعلمت بنبض الدم أنه من شريان
 انقطع فضع الضرر على الموضع وشده بالرفاء شدا محكما واتركه ولا
 تعاوده واترك الحصة ولا تخرجها فربما هلكت العليلة ثم عالج الجرح³⁰
 فإذا سكنت حدة الدم⁷ بعد أيام⁸ وتعفن الموضع فارجع إلى عملك
 حتى تخرج الحصة،

7. BM. الورم 8. om. B.

CHAPTER SIXTY-TWO. On opening a watery hernia.¹

A watery hernia is a collection of fluid in the white membrane lying beneath the skin surrounding the testicle, which is called the scrotum. Sometimes it has a capsule of its own which nature has formed alongside the testis so that one would think it another testicle; it may also form between the skin of the scrotum and the white membrane² which we mentioned; however, this occurs very rarely. This hernia arises from a weakness occurring in the testicles and this matter drains into it; sometimes it happens from a blow upon the testicles. The fluid is of different colours, sometimes yellowish, sometimes blood-red, sometimes like lees,³ black, and sometimes the fluid is watery-pale; this actually is the commonest. Now these are the signs whereby we know where the fluid is collecting: if it be in the tunica albuginea, as we have said, the tumour will be round and slightly elongated like the shape of an egg. The testis is not apparent since the fluid hems it in all round. But if the fluid be contained in a capsule of its own the tumour will be round, to one side of the testicle; therefore one imagines that it is another testicle. If the fluid be situated between the skin of the scrotum and the tunica albuginea it will be obvious to the touch. If you wish to know the colour of the fluid, take a sample from the tumour by means of the four-sided exploring needle which has been figured previously; and by what comes out in the track of the explorer you may know the colour of the contained fluid.

When we begin operative treatment the patient should be told to be venesected, if possible, if you see that he is of a plethoric bodily habit. Then let him lie on his back upon something a little raised, and have a heap of

¹ i.e. hydrocele.

² i.e. tunica albuginea.

³ HS read 'rusty'.

BOOK TWO. CHAPTER SIXTY-TWO

Hydrocele and its treatment, especially by radical cure, is described in detail. The teaching is chiefly derived from the classical authors, Celsus (VII. 21), Galen (*Meth. Med.* XIV. 13), and Paulus (VI. 62); the last being likely to be the immediate source. Albucasis uses a kind of trocar; not as nowadays for draining the hydrocele but for tapping a sample for examination.

The many-tailed bandage, described by

Paulus, is illustrated by both MSS.; the drawings make clear how it was made and how used. Albucasis finally mentions the cannula and suggests its introduction, in certain cases, into the opening in the tunica, using the quill or tube employed in ascites. This refers back to chapter 54 (figs. 128, 129) and follows Galen (*Meth. Med.* XIV, 13) who recommends the introduction of a syphon.

الفصل الثانى والستون فى الشق على الأدره المائيه

الأدره المائيه إنما هى اجتماع رطوبة فى الصفاق الأبيض الذى يكون تحت جلده الخصى المحيطة بالبيضة وتسمى الصفن وقد يكون فى غشاء خاص له تهيئه الطبيعة فى جهة من البيضة حتى يظن أنه بيضة أخرى ويكون بين جلده الخصى وبين الصفاق الأبيض الذى قلنا ولا يكون ذلك إلا فى الندرة، وتولد هذه الأدره من ضعف يعرض للأنثيين فتتصبب اليها هذه الماده وقد تعرض عن ضربة على الأنثيين وهذه الرطوبة تكون ذات ألوان كثيرة إما أن يكون لونها الى الصفرة وإما أن تكون دمية حمراء، وإما أن تكون درديّة سوداء، وإما أن تكون مائيه بيضاء، وهى أكثر ما تكون، والعلامات التى يعرف بها حيث اجتماع الماء فإنه إن كان فى الصفاق الأبيض الذى قلنا فالورم يكون مستديرا الى الطول قليلا كشكل بيضة ولا تظهر الخصية لأن الرطوبة تحيط بها من جميع النواحي، وإن كانت الرطوبة فى غشاء خاص لها فإن الورم يكون مستديرا بجهة من البيضة ولهذا يتوهم الإنسان أنها بيضة أخرى، وإن كانت الرطوبة بين جلده الخصى والصفاق الأبيض فإنه يقع تحت الحس، وأما اذا أردت معرفة لون الرطوبة فاسبر الورم بالمدس المرتع الذى تقدمت صورته فما خرج فى اثر المدس حكمت عليه بما داخله،

فإذا صرنا الى العلاج بالحديد فينبغى أن تأمر العليل بالفصد 20 إن أمكه ذلك ورأيت جسمه ممتلئا ثم يستلقى على ظهره على شىء عال

material placed beneath him. Then sit down on his left side, and bid an assistant sit on his right side and draw out his penis toward one side or other of the scrotum and toward the hypogastrium. Then take a broad scalpel and make a longitudinal incision in the scrotum, from the middle almost to the pubes. The incision should be straight, on a parallel with the median raphe of the scrotum, down to the tunica albuginea, and dissect away from it carefully lest you cut it. You should dissect chiefly on the side where the testicle is most adherent, and take your dissection as far as possible. Then open up the membrane containing the fluid with a wide perforation and draw off all the fluid. Then with hooks separate the two edges of the incision and draw the membrane upwards but do not touch the skin overlying the testes; then cut away the membrane in whatever way is possible, either as a whole or piecemeal, particularly the side piece; for unless you use the utmost diligence in cutting it away you cannot be certain that the fluid will not come back. If the testicle should protrude from its covering of skin while you are operating, return it when you have finished cutting the membrane; then bring together the two edges of your incision with a suture. Then dress with the usual dressings for wounds until healed.

If you find the testicle corrupted by some other disease, you will have to tie off the vessels which are in the suspensor,¹ for fear of haemorrhage. Then cut the testicle from² the suspensor and remove it and dress as we said above.

If the accumulation of fluid be on both sides you may know it to be a double hydrocele; so make another incision on the other side as you did for the first. If it is convenient for you to make one operation of it, do so. Then

¹ The reading is that of V. HS read 'which contain the suspensor', M 'which are from the suspensor', ABP 'which are the suspensor'.

The term translated 'suspensor' (*mīlāq*, lit. 'hanger') is given by Fonahn (no. 2071) with the meaning 'vas deferens'. Comparison with our next chapter suggests that it is rather the spermatic cord which is meant.

² All MSS. here read 'with'.

قليلا وتضع تحته خرقة كثيرة ثم تجلس أنت على يساره وتأمر خادما
 بالجلوس عن يمينه يمدّ ذكره الى أحد جانبي جلدة الخصى والى
 ناحية مراق البطن ثم تأخذ مبضعا عريضا وتشقّ جلدة الخصى من
 الوسط بالطول الى قريب من العانة وتصير الشقّ على استقامة موازيا
 25 للخط² الذى يقسم جلدة الخصى نصفين حتى يصل الى الصفاق الأبيض
 الحاوى فتسلخه وتحفظ من أن تشقّه ويكون سلخك له من الجهة التى
 تلتصق بالبيضة أكثر وتستقصى السلخ على قدر ما يمكنك، ثم تبطّ
 الصفاق المملوء ماء بطا واسعا وتخرج جميع الماء، ثم تفرق بين
 شفتى الشقّ بصنارات وتمدّ الصفاق الى فوق ولا تمسّ جلدة الخصا
 30 الحاوية وتقطع الصفاق كيف ما أمكنك قطعه إمّا بجملته وإمّا قطعاً
 قطعاً ولا سيما جانبه الرقيق فإنك إن لم تستقص قطعه لم تأمن الماء³
 أن يعود، فإن برزت البيضة الى خارج عن جلدها فى حين عملك
 فإذا فرغت من قطع الصفاق فردّها ثم اجمع شفتى جلدة الخصى
 بالخياطة ثم عالجه علاج سائر الجراحات حتى يبرأ،
 35 فإن أصبت البيضة قد فسدت من مرض آخر فينبغى أن تترسّط
 الأوعية التى فى⁴ المعلق خوف النزف ثم تقطع الخصية من⁵ المعلق
 وتخرج البيضة ثم تعالجه بما ذكرنا،
 فإن كان الماء المجتمع فى الجهتين جميعا فاعلم أنّها أدريان
 فشقّ الجهة الأخرى على ما قد فعلت فى الأولى سواء وإن استوى
 40 لك أن يكون العمل واحدا فافعل، ثم تمسح الدم وتدخل فى

2. H. للخيطة. 3. om. AMP. 4. V, ABP, M, S, فيها
 H. هى فيها. 5. codd. مع.

wipe away the blood and apply to the incisions wool that has been soaked in olive-oil or oil of roses and on that again more wool that has been soaked in wine and oil, and spread that over the testicles and over the hypogastrium; and over that again folded pieces of linen forming pads and bind them down with a bandage having six heads (fig. 138). Two pieces of cloth should be taken and sewn together and packed in between with carded wool to this pattern. The ends by means of which it is attached should be made of cotton or soft wool and should be drawn tight at the waist of the breeches. One of the ends you take over the seat toward the back: the second end you take toward the pubes, the two ends round the thighs below, and the remaining two ends over the groin, and the whole is bound up tight with the belt of the breeches.

This rupture may also be treated by cautery instead of surgery. This will mean taking a knife-edged cautery and cutting with it the skin of the testicles; it should be hot, as we told you before, and used until the white

الشقوق صوفا قد غمسته في الزيت او في دهن الورد وتصير من خارج صوفا آخر قد غمسته في شراب وزيت وتبسطه على الخصيتين ومراق البطن وتضع من فوق خرقا مطوية وهي الرفائد وتربطها من فوق بالرباط الذي هو ذو ستة أطراف على هذه الصورة :

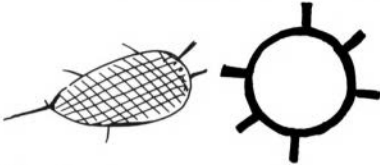


Fig. 138

Marsh

Huntington

45 ثم تؤخذ خرقتان فتخاط وتحشى بالصوف المنفوش على هذا المثال وتصنع الأطراف التي يزم بها من قطن او صوف رطب وتجمع بالشد في حزام السراويل وأحد الأطراف تأخذ على المقعدة الى الظهر والثاني تأخذ الى نحو العانة والطرفين على الفخذين من أسفل والطرفين الباقيين على الأريتين وتجمع الشد كله في حزام السراويل ،
 50 وقد تصنع هذه الأدرة أيضا بالكلى بدلا من الشق بالحديد وهو أن تأخذ مكواة سكينية لطيفة فتشق بها جلدة الخصى وهي حامية على

membrane covering the hydrocele be exposed. Then take another cautery of this type (fig. 139), which resembles the Greek letter tau;¹ and with it perforate that membrane. It should be hot so as to draw out all the humidity. Then stretch the membrane with hooks, dissect away the capsule with the cautery and cut it away as best you are able until you have completely removed it. But be careful that the heat do not touch the testicle. You should know that this operation is safer, further removed from the danger of haemorrhage, and better, than operation by incision. If, while operating either with the knife or the cautery, you are hindered by an inflammatory swelling or haemorrhage or anything else, you should deal with all of them by suitable treatment in accordance with what has been said before.

If the patient be timid and will not suffer this operation on account of its unpleasantness, then treat by perforation as I shall now describe. When by the signs we have mentioned you are certain that the hernia is watery, you should seat the patient on a high chair and pierce the tumour in its lower part with a broad scalpel. The perforation should run in the long

¹ The MSS. all read 'the Greek *ayn*', but, as Channing rightly comments (p. 298), *De Litera Ain Graeca, quis unquam audiverit?* The only simple emendation would be to read *ghayn* instead of *ayn* and translate 'the Greek gamma' (though the usual counterpart of gamma is *jim*, not *ghayn*); a cautery in the shape of a capital gamma would present the same business-end as one in the shape of a tau. But this possibility is ruled out by the uncompromising T-shape of the figure in all of our MSS.

ما وصفنا حتى انكشف الصفاق الأبيض الحاوى للما فخذ مكواة أخرى
على هذه الصورة :

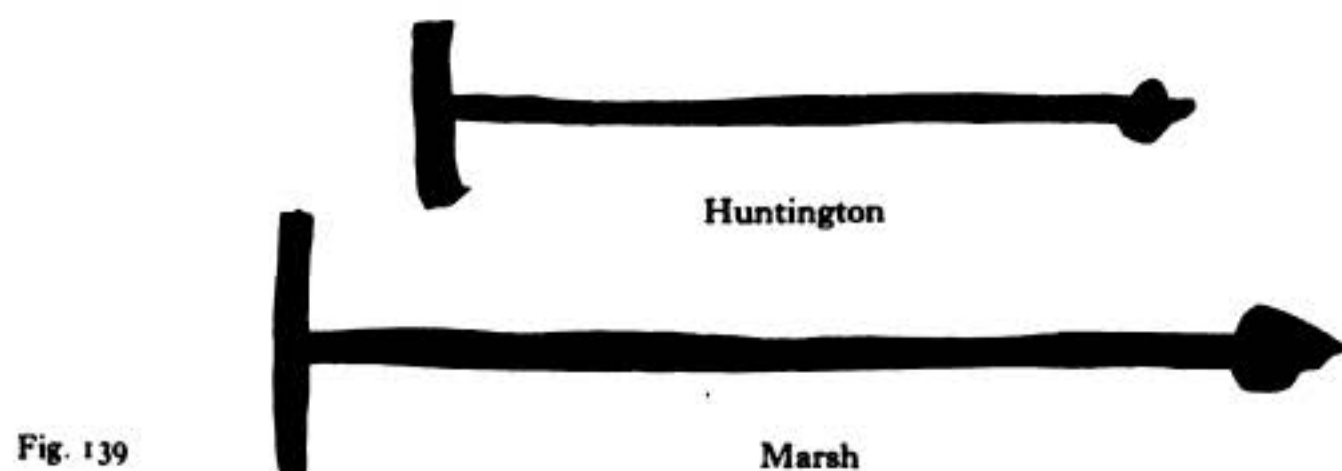


Fig. 139

وهى تشبه العين اليونانية^٥ ثم تبطّ بها ذلك الصفاق وهى
٥٥ حامية حتى تخرج الرطوبة كلها ثم تمدّ الصفاق بالصنانير وتسليخ
بالمكواة الطبقة^٦ الحاوية وتقطعها على حسب ما أمكك حتى تستأصل
جميعها وتحفظ من البيضة لا تمسها النار، واعلم أن هذا العمل
أسلم وأبعد من نزف الدم وأفضل من العمل بالشق، فإن اعترضك
فى جين الشق أو فى حين الكى ورم حار أو نزف دم أو شىء آخر
٦٥ فينبغى أن تعالج كلما اعترضك من ذلك بالعلاج الذى يصلح له على
ما تقدّم،

فإن كان العليل جباناً ولم يصبر على هذا العمل لشنأته
فليستعمل البطّ على ما أنا واصفه وهو^٨ إذا صحّ عندك^٨ بما قدّمنا من
الدلائل أن الأداة مائية فينبغى أن تجلس العليل على كرسى مرتفع
٦٥ ثم تبطّ الورم فى أسفله بمبضع عريض واجعل البطّ على طول البدن

عندنا ٨. V. الصيقة ABP، اللطيفة ٧. cett. اليونانى P، ٦.
P. إذا اصحّ

axis of the body, and it should be an ample opening to let all the fluid run out. Then put cotton on the place and bind it on and leave it so as to soak up the rest of the fluid; then dress the wound until it heals. But if the fluid fail to flow out when the opening is made, which would be due to the tunica albuginea's obtruding into the opening and preventing the outlet of the fluid, you should then introduce into the wound a goose-quill or an instrument such as is used for ascites, already described; or else the opening should be widened a little. But you should know that after six months or so the fluid may come back and collect again; when it does so, perforate him in exactly the same manner; so will the patient prolong his life.

ويكون الفتح واسعا حتى يسيل الماء كله ثم ضع على الموضع قطناً⁹
واربطه واتركه يحصل¹⁰ باقى الماء ثم عالجه حتى يبرأ الجرح ، فإن تعذر
خروج الماء فى حين بطك له وإنما يكون بسبب أن الغشاء الأبيض
يعترض فى فم الجرح فيمنع خروج الماء فحينئذ ينبغى أن تدخل فى
70 الجرح ريشة إوز¹¹ أو الآلة التى يستخرج بها ما¹² المحبوسين التى
تقدمت صورتها أو زد فى فتح الجرح قليلاً ، واعلم أن الماء قد
يعود ويجتمع بعد ستة أشهر أو نحوها فإذا اجتمع فبطه على الصفة
نفسها ويدافع العليل أيامه ،

H. يمس ، B ليحصل . 10. codd. قطنه . 9.

11. BV, om. cett. 12. B, om. cett.

CHAPTER SIXTY-THREE. On cutting for a fleshy hernia and its treatment.

You should know that cutting for this kind of hernia has an uncertain outcome and in most cases results in death; and therefore I think it better to let it be and to safeguard the patient. However, I shall mention the manner of operating for this and all kinds of tumour. Now I say that many tumours arise from the bodies composing the testicles; and this from several causes. It may be from an acrid superfluity running down into the testicles, or from a blow. The colour of the tumour will be like that of the rest of the body and there is no water¹ to it. The lump will be solid and often will be stony hard, of a dark colour, and without sensation. Sometimes also it arises from a knotting and inflation of the arteries, as has been mentioned, or from an inflation of the veins. The sort arising from a swelling of the arteries may be recognized by a dispersal² of the lump when you press upon it with your fingers; this should not be interfered with at all. The sort arising from a swelling of the vein will not disperse when you press upon it with your fingers. It is sometimes possible to cut down on this kind and also on the other fleshy tumours thus: make an incision in the skin of the testicles; then draw the testicle upward and out of the tunica albuginea, and free the suspensor from the vessels and tie the vessels, and cut the suspensor after you have freed it from all round the testicle. Should it happen that the testicle is adherent to the fleshy growth, you will have to cut away the testicle itself and remove it. But should the adhesion have formed somewhere inside the membranes or in the space between the vessels, then you must free the adhesion as a whole and cut it away with a circular incision. If the fleshy growth should be at the site of the junction which is behind, you will have to cut the whole thing away and remove

¹ A very slight emendation could turn 'water' into 'pain'.

² The addition by a second hand in H is a Persian gloss meaning 'to be dispersed'.

BOOK TWO. CHAPTER SIXTY-THREE

Sarcoma of the testicle, or malignant seminoma, could be the pathology of the condition about which this chapter is written. Celsus, first, gave the definition of *σαρκοκήλη*

in Book VII. 18, and gives the treatment in VII. 23. Paulus (VI. 63) expands it somewhat and his chapter is transcribed by Albucasis.

الفصل الثالث والستون فى الشق على الأدره اللحمية وعلاجها
 اعلم أن الشق على هذه الأدره من الغرر المؤدى الى الهلاك
 فى أكثر الأحوال فلذلك نرى تركها والسلامة منها وأنا ذاكر العمل
 فيها وأنواع الورم، فأقول إنه قد تحدث أورام كثيرة فى الأجسام التى
 5 يكون منها تركيب الأنشيين ويكون ذلك من أسباب كثيرة إما من
 فضلة حريفة تنصب الى الأنشيين وإما من ضربة ويكون لون الورم على
 لون الجسد ولا يوجد له الماء ويكون الورم جاسيا وربما كان الورم
 متحجرا لونه كمد ولا حس له وقد يكون من تعقد الشريانات
 وانتفاخها كما قد تقدم ذكره او من انتفاخ الأورده، فما كان من
 10 انتفاخ الشريانات فيعرف ذلك بتبدد¹ الورم اذا كبسته بأصابعك ولا
 ينبغى أن يعرض له البتة، وإما الذى يكون من انتفاخ الأورده² فإنه
 لا يتبدد² منه شئ عند الكبس بالأصابع، وهذا النوع قد يمكن أن
 يشق عليه وعلى سائر اللحوم وهو أن تشق جلدة الخصى ثم تمد
 البيضة الى فوق وتخرجها من الصفاق الأبيض وتخلص المعلاق من
 15 الأوعية وتربط الأوعية وتقطع المعلاق بعد أن تخلصه من كل جهة من
 جهات البيضة، فإن كانت البيضة قد التحمت بتلك اللحوم النابتة
 فينبغى أن تخرج البيضة وتقطعها، وإن كان الالتحام بين شئ من
 الصفاقات او فيما بين الأوعية فينبغى أن تخلص جميع ذلك الالتحام
 وتقطعه قطعاً مستديراً، فإن كان نبات اللحم فى موضع الالتصاق
 20 الذى يكون من خلف فينبغى أن تقطع جميعه وتخرج البيضة كما قلنا

H انه يتبدد. 2. H² sub. lin. پراكده شدن H, بتبديد P, لسديد 1.

the testicle as we have said. And when your operation is finished, pack the wound with wool moistened with oil of roses and wine; then dress in the usual manner until healed.

فإذا تمّ عطفك فاحش الجرح بالصوف المبلول في دهن الورد والشراب
ثمّ عالجه بسائر العلاج حتى يبرأ،

CHAPTER SIXTY-FOUR. On the treatment of hernia with varix.¹

A varix is a twisted tumour resembling a cluster of grapes, with relaxation of the testicles, which makes movement and exercise and walking difficult for the patient. The treatment of this condition is of uncertain outcome, akin to those conditions just spoken of. Nevertheless we must describe the operation for this condition as it was performed by the Ancients. So I begin by saying that you must have the patient sitting upon a high seat; then push down the suspensor of the testicles and take hold of the skin of the testicles with your fingers together with the blood-vessels near the penis; then let your assistant take hold instead of you and draw out strongly. Then with a broad sharp scalpel make an oblique incision in the direction of the vessels so that the vessels are laid bare. Then dissect on all sides in the same way as I told you for extracting the temporal vessels. Then run through them a needle doubly threaded and tie at the spot where the varix begins and tie it again where the varix ends, then cut through the varix in the middle with an incision at right angles to the length of the body and draw out the turbid corrupt humidity that has gathered in it. Then dress the wound with the wound dressings usual where you wish to encourage suppuration, so that the vessels nourishing the one testicle may perish; there is no harm in that. But if all the vessels are varicose then you will have to remove one testicle with its vessels lest the testicle be deprived of nourishment through cutting into the vessels; for it will wither and be of no use.

¹ i.e. varicocele.

BOOK TWO. CHAPTER SIXTY-FOUR

Varicocele, in this chapter, is clearly identifiable with Celsus' *cirsocele* (VII. 18). Albucasis acknowledges his debt to the Ancients. Celsus (VII. 22) gives the procedure; Galen

also; but Paulus again is the immediate source (VI. 64); the surgical equipment requires no note.

الفصل الرابع والستون في علاج الأذرة التي مع دالية

الدالية هي ورم ملتحو بعض الالتواء شبه بمنقود مع استرخاءه
الأنثيين وتعرض على الحليل الحركة والرياضة والمشى وفي علاج هذه
العلّة من الغرر قريب مّا تقدّم ذكره ولكن ينبغي أن نذكر العمل
5 فيه على ما فعلت الأوائل، فأقول إنه ينبغي أن تجلس الحليل على

كرسى مرتفع ثم تدفع^١ ملاق الأنثيين الى أسفل ثم تمسك جلدة
الخصى بأصابعك مع الأوعية التي هي قريبة من القضيب ويسكها
خادم غيرك ويمدّها مّا شديدا ثم تشقّ بوضع عريض حاثّ شقّا
موربا^٢ بهذا^٣ الأوعية حتى تتكشف الأوعية ثم تسليخ من كلّ جهة كما

١٥ ذكرت لك في سّل الشريانات التي في الأصداغ ثم تغرز فيها إبرة
فيها خيط مشى وتربطها في أول المواضع التي عرضت لها الدالية
وتربطها أيضا في آخرها، ثم تشقّها في الوسط شقا قائما على طول
البدن وتخرج ما اجتمع فيها من الرطوبات المعركة الفاسدة ثم تعالج
الجرح بعلاج سائر الجراحات التي تريد أن تتولّد فيها مّدة لتسقط
١5 الأوعية التي تغذو إحدى الأنثيين فلا بأس بذلك، فإن عرضت
الدالية لجميع الأوعية فينبغي أن تخرج إحدى^٤ الأنثيين مع الأوعية
لئلا تعدم البيضة الغذاء من قبل قطع الأوعية فتدبل ولا ينتفع بها،

AP، لهذا 3. cett. موازيا B، موريا MV، 2. cett. ترفع V، مررع 1.
H. بهذا

CHAPTER SIXTY-FIVE. On the treatment of intestinal hernia.

This hernia is due to a split occurring in the membrane stretched from the hypogastrium over the belly in the region of the groin. Through this opening the bowel descends upon one of the testes; this opening is due to the membrane's splitting or stretching. And these two kinds occur from a number of causes: from a blow or jumping or shouting, or lifting a heavy weight, or a similar cause. The symptoms of it, when it arises from a stretching of the membrane, are that it is a slow and chronic development and does not happen on a sudden, and the swelling is even and deep down, because the membrane is pressing the bowel. When it is due to a split in the membrane, the signs will be that it starts with a sudden severe pain, and the lump varies in consistency, appearing close under the skin; that is due to the emergence of the bowel and its passage outside the membrane. Sometimes also the omentum comes out with the bowel, and this hernia is called intestinal and omental; sometimes it contains wind. Sometimes also the excrement comes down with the bowel and gets held up there, and this involves the patient's death, for thence arises an intractable pain and borborygmi, specially when pressed upon. The treatment of the varieties of this disease with the knife is dangerous; so be cautious of rushing at it. The manner of operating is to bid the patient reduce the bowel back into the belly if it be disposed to return, then lie back before you and raise his legs. Then do you stretch upward the skin adjacent to the groin, and cut the whole length of the skin of the testicles; then attach to the edges of the incision as many hooks as are necessary to open the incision. The incision should be sufficiently large to allow the testicle to be drawn out. Then dissect away the tissues that lie beneath the skin of the scrotum so that the

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Hernia was always of importance from the earliest times. Arab techniques differ in no important point from those given by Celsus (VII. 20) and the rest down to Paulus (VI. 64).

It has already been discussed by several modern authors; and no mention is made of any outstanding instrument for the operation.

الفصل الخامس والستون فى علاج الأدرة المعائية

حدث هذه الأدرة من شق يعرض فى الصفاق الممتد على البطن
فى نحو الأريتين من مرق البطن فينصبّ المعاء من ذلك الفتق
الى أحد الأنشين وهذا الفتق يكون إما من شق الصفاق وإما من
5 امتداده ويحدث هذان النوعان من أسباب كثيرة إما ضربة او وثبة او
صيحة او رفع شىء ثقيل ونحو ذلك وعلامته اذا كان من امتداد
الصفاق أن يحدث قليلا قليلا فى زمن طويل ولا يحدث بغتة ويكون
الورم مستويا الى نحو العمق من قبل أن الصفاق يعصر المعاء ،
وعلامته اذا كان من شق الصفاق أنه يحدث من أوله وجعا عظيما
10 دفعة ويكون الورم مختلفا ظاهرا تحت الجلد بالقرب وذلك بخروج
المعاء ومضيره الى خارج من الصفاق ، وقد يخرج مع المعاء الشرب
فتسمى هذه الأدرة معائية وثرية وقد تكون مع ريج ، وقد يجرى فى
المعاء الزبل ويحتبس هناك فيكون معه هلاك العليل لأنه يحدث
وجعا صعبا وقرقرة ولا سيما اذا عصره ، وعلاج أنواع هذه العلة
15 بالحديد خطر فينبغى أن تحذر الوقوع فيه ، وصفة العمل أن تأمر
العليل أن يرد المعاء بيده الى داخل جوفه إن تأتى للرجوع ثم
يستلقى على قفاه بين يديك ويرفع ساقيه ثم تمدّ الجلد الذى يلى
الأريّة الى فوق وتشقّ جلدة الخصى كلها بالطول ثم تغرز فى شفتى
الشق صنارات على قدر ما يحتاج لفتح الشق بها ويكون الشق على
20 قدر ما يمكن أن تخرج منه البيضة ، ثم تسلخ الصفاقات التى تحت

1. add. Channing.

hard tunica albuginea be exposed all round. Then introduce your forefinger in around the testis in the space between the white membrane beneath the skin of the testicle and the second membrane, and with your forefinger free the attachment at the back of the testicle. Then with your right hand explore within the scrotum and fold back the covering of the testicles, at the same time stretching the tunica albuginea upwards with the left hand, and bring the testis with the membrane up into the opening, and bid your assistant to stretch the testis upwards; and do you fully free it from the posterior attachment. Feel with your finger that there be no part of the intestine that has got twisted within the tough white membrane; and should you find any push it back into the abdomen. Then take a needle with a stout tenfold thread and enter it near the end of the membrane which lies beneath the skin of the testicles alongside the rupture; then cut the end of the loop of thread to make four sutures and arrange one over the other in the form of a cross; and with these ligate the membrane of which we have spoken with a strong ligature on each side; then twist the ends of the thread and tie them with a strong knot to prevent anything from reaching the nutrient vessels of the testicles,¹ lest an abscess occur thereby; and make also another ligature outside the first one, rather less than two fingers' breadth from it; and after making these two ligatures leave a finger's breadth of the membrane that is beneath the skin of the testicles and cut the rest away round, and with it remove the testis. Then make a counter-incision in the lower part of the skin of the testicles, to let the blood and matter drain away as we bade

¹ H 'to prevent the nutrient vessels from bringing any blood to them'.

جلدة الخصى حتى اذا انكشف الصفاق الأبيض الصلب من كل ناحية
فحينئذ فأدخل أصبعك السبابة فيما يلي البيضة فيما بين الصفاق
الأبيض الذى تحت جلدة البيضة وبين الصفاق الثانى وتطلق بهما²
الالتصاق الذى من خلف البيضة، ثم تشى باليد اليمنى الى داخل
جلدة الخصى ومع هذا تمدّ الصفاق الأبيض الى فوق باليد اليسرى
وترفع البيضة مع الصفاق³ الى ناحية الشق وتأمّر الخادم بمدّ البيضة
الى فوق وتطلق أنت الالتصاق الذى من خلف اطلاقا تاما وتفتش
بأصبعك⁴ لئلا يكون هناك شئ من المعاء المتوى فى الصفاق الأبيض
الصلب فإن أصبت منه شيئا فادفعه الى البطن أسفل، ثم تأخذ
إبرة فيها خيط غليظ قد قتل من عشرة خيوط وتدخلها عند آخر
الصفاق الذى تحت جلدة الخصى الذى يلي الشق ثم تقطع أطراف
انشاء الخيط حتى تكون أربعة خيوط ثم ترتب بعضها على بعض
بشكل مصلب وتربط بها الصفاق الذى قلنا إنه تحت جلدة الخصى
رباطا شديدا من ناحيتين ثم تلف أيضا أطراف الخيوط وتربطها رباطا
شديدا حتى لا يقدر شئ من الأوعية⁵ التى تغذوها⁶ على أن يصل
اليها شئ⁶ لئلا يعرض من ذلك ورم حار وتصير أيضا رباطا ثانيا
خارجا من الرباط الأول بعيدا منه أقل من أصبعين وبعد هذين
الرباطين تدع من الصفاق الذى تحت جلدة الخصى قدر عظم
الأصبع وتقطع الباقي كله على استدارة وتنزع معه البيضة، ثم تشق
أسفل جلدة الخصى شقا يسيل منه الدم والمدة كما وصفنا فيما تقدم،

2. codd. به. 3. M. الصفاقات. 4. AMP. بأصبعك. 5. om. H.

H. يوصل اليها شيئا من الدم. 6. ASP. ان معدوها.

you before. Then apply wool soaked in oil to the wound, and the bandage that we prescribed (sometimes also the white membrane that we spoke about is cauterized after the incision to forestall haemorrhage, for that usually happens) and let the ligatures be until they fall away spontaneously. If they are slow in coming away, then foment with hot water and apply something to sweat them off. Then dress the wound in the usual manner until it heals.

ثم يستعمل الصوف المغموس في الزيت ويوضع في الجرح ويستعمل
الرباط الذي وصفنا ، وقد يكوى الصفاق الأبيض الذي قلنا بعد
قطعه حذرا من نزف الدم فكثيرا ما يعرض ذلك، وتترك الرباط
حتى يسقط من ذاته فإن أبطأ سقوطه فلينطل بالماء الحار وتحمل عليه
45 ما يعرقه⁷ حتى يسقط ثم تعالج الجرح بسائر علاج الجراحات حتى
يبرأ،

B. نذكره ، HS، سوكره ، APV، سوكده ، M، 7.

CHAPTER SIXTY-SIX. On flatulent hernia.

I have not seen anyone pluck up enough courage to attempt the operative treatment of this kind of rupture. The Ancients indeed said it ought to be done in the same way as hernia with varicocele; namely, to ligate the blood-vessels after cutting down upon them, gently, and lower down. Then make an incision in the middle and apply to the tumour such things as will keep it open until the blood-vessels fall away. And dress the wound in the manner we have already mentioned until it heals.

BOOK TWO. CHAPTER SIXTY-SIX

The complaint dealt with in this chapter is the same as the pneumatocele of Paulus (vi. 64) who quotes Leonides as forbidding operation. Albucasis evidently had had experience of this condition but we cannot now identify it.

الفصل السادس والستون فى الأدره الريحيه

هذه الأدره الريحيه ما رأيت أحدا اجتراً على علاجها بالحديد
وقد ذكرت الأوائل أن يصنع كما وصفنا فى الأدره التى مع دالسيه
وذلك أن تربط الأوعيه بعد الشق عليها برفق أسفل ثم تشق فى
الوسط وتعالج الورم بما يفتحها حتى تسقط الأوعيه وتعالج الجرح على
ما ذكرنا حتى يبرأ ،

CHAPTER SIXTY-SEVEN. On the treatment of the rupture that occurs in the groin.¹

Sometimes there occurs a rupture in the groin as we have said, and the part protrudes. No portion of the intestine descends into the scrotum; or if anything it will be only a tiny portion and will reduce at any time. But if it goes on for a long time the rupture in the membrane increases until the bowel and omentum descend into the scrotum. It arises from a stretching of the membrane in the groin, as we said; the membrane² stretches and then relaxes and the place swells. Its treatment by the cautery is as I have already described. Sometimes also it is treated with the knife in this manner: With the patient lying back before you, make an incision three fingers wide, transversely across the swelling of the rupture which projects. Then perforate the subcutaneous tissues so as to expose the white membrane³ that lies under the skin alongside the rupture. Take a probe and place it upon the projecting part of the fascia and push it back into the depths of the abdomen. Then sew together the two swollen portions of membrane over the end of the probe and suture the one to the other. Then take out the probe. On no account make the incision *into* the fascia nor touch the testis nor anything else, as I taught you on the subject of treating the intestinal hernia. Then dress the wound, and when the stitches come apart remove them and bandage the wound again until it is healed over. For the membrane will draw together and the rupture will not come out again. But the cautery is better at this spot, for it is safer.

¹ Femoral hernia.

² i.e. the peritoneum.

³ i.e. the deep fascia.

BOOK TWO. CHAPTER SIXTY-SEVEN

Femoral, rather than inguinal, hernia seems to answer to the description here; as it is expressly mentioned that the bowel does not pass down into the scrotum. The operation recommended follows the very words of Paulus (VI. 66) who, however, gives a

number of various cauteries, saying that the cautery is preferred by the more modern surgeons. None of these is mentioned by Albucasis in his chapter in Book I on the subject (chapter 45).

الفصل السابع والستون فى الفتق الذى يكون فى الأريّة

قد يعرض الفتق فى الأريّة كما قلنا فينتو الموضع ولا ينحدر الى
الأنشيين شئ من المعاء وإن انحدر كان ذلك يسيرا ويرجع فى كلّ
الأوقات ولكن إن طال به الزمان زاد الشق فى الصفاق حتى ينحدر
5 المعاء والشرب فى الصفن¹ ويعرض ذلك من امتداد الصفاق² الذى
يكون فى الأريّة كما قلنا وذلك أنه يمتد الصفاق ثم يسترخى ويرم
الموضع وينتو، وعلاجه بالكى كما قدّمت وصفه، وقد يعالج بالحديد
على هذه الصفة وهو أن يضطجع العليل على ظهره بين يديك ثم
تشق موضع الفتق الوارم الناتى شقا بالعرض على قدر ثلاث أصابع ثم
10 تبط³ الصفاقات التى تحت الجلد حتى اذا انكشف الصفاق الأبيض
الذى يليه فتأخذ مرودا فتضعه على الموضع الناتى من الصفاق وتكبسه
الى عمق البطن ثم تخطط الموضعين الناتيين على طرف المرود من
الصفاق وتلزم بالخياطة أحدهما بالآخر، ثم تسل طرف المرود ولا
تقطع الصفاق البتة ولا تمس البيضة ولا غير ذلك كما أعلمتك فى
15 علاج الأدرة المعائية ثم تعالجه بعلاج الجراحات فإذا انقطعت
الخيوط نقيتها وجبرت الجرح حتى يندمل فإن الصفاق ينقبض ولا يزيد
نتو الفتق، والكى أجود فى هذا الموضع لأنه أقرب الى السلامة،

1. MV, cett. 2. V. الصفن. 3. M, BS, يضبط, cett.

CHAPTER SIXTY-EIGHT. On the loosening of the skin of the scrotum.

In some men there often occurs a loosening of the skin of the scrotum without any loosening of the organs within. This has a horrible appearance. He who desires to treat this condition should make the patient lie on his back; and he should cut away all the loose skin that is over and above the normal. Then he should bring together the two edges of the incision with a suture. Or, if you prefer, first suture the excess of loose skin together, with three or four stitches, and make the suture firm. Then cut away what is taken up between the stitches. Then dress the wound with the usual dressings till it heals and the stitches come away.

BOOK TWO. CHAPTER SIXTY-EIGHT

Rhacosis literally means 'wrinkling' and was the name given by the Greek authors to wrinkling of the skin of the scrotum. We do not know what they meant by it. This

chapter is taken direct from Paulus vi. 67. He recommends the use of shears (*ψαλίς*). The import of this evidence was discussed in the Comment to chapter 57.

الفصل الثامن والستون فى استرخاء جلدة الخصى

كثيرا ما تسترخى جلدة الخصى فى بعض الناس من غير أن تسترخى اللحوم التى فى داخلها ويقبح منظرها ، فينبغى لمن رغب فى علاجها أن ينوم العليل على ظهره ويقطع جميع الجلد الذى 5 استرخى على الجلد الغليظ ثم تجمع الشفتين ، وإن شئت أن تخط أولا فضلة الجلد المسترخى بثلاث خياطات او أربع وتستوثق من الخياطة ثم تقطع ما بين الخياطات ثم تعالجه بعلاج سائر الجراحات الى أن يبرأ وتسقط الخيوط،

CHAPTER SIXTY-NINE. On castration.

Castration is forbidden in our law and I ought therefore to make no mention of it in my book. But I must speak of it for two reasons. One reason is that it should be part of the doctor's medical knowledge when asked about it, and that he should know how to treat anyone whom it befalls. Another reason is that often we need to castrate certain animals for the sake of the benefits that accrue from them, such as rams, he-goats and cats, and such animals. So I say that castration can be performed in two ways: either by contusion; or by opening up and cutting away. The method by contusion is that we make the animal sit in warm water until his testes are relaxed and become soft and pendent; then rub them with your hand until they are so loosened that they are no longer palpable. As to castration by open operation and excision, the animal should be held and pressure put upon the scrotum with the left hand. Then tie the spermatic cord and with one incision cut down upon both testicles so that both are brought up out of the scrotum. After dissecting them away cut them off; do not leave any of the coverings upon them except the thin membrane covering the vessels. This manner of castration is better than the contusion method, for contusion often leaves something of the testicles, and the animal desires to couple. Then dress the wound until healed.

BOOK TWO. CHAPTER SIXTY-NINE

This chapter on castration comes directly from Paulus (vi. 68), with the added mention of the gelding of certain domestic animals taken from Aristotle (*Hist. Animal.* ix. 50) or from one of the later writers that follow him.

الفصل التاسع والستون فى الإخصاء

إن الإخصاء فى شريعتنا محرم ولهذا كان ينبغى لى أن لا أذكره فى كتابى هذا وإنما ذكرته لوجهين أحدهما ليكون ذلك فى علم الطبيب اذا سئل عنه وليعلم علاج من اعتراه والوجه الآخر أننا كثيرا ما نحتاج الى إخصاء بعض الحيوان لمنافعنا كالحملان والتيوس والقطط ونحو ذلك من الحيوان ، فأقول إن الإخصاء يكون على ضربين إما بالرض وإما بالشق والقطع ، فالذى يكون بالرض فطريق عمله أنا نجلس الحيوان فى ماء حار حتى تسترخى أنشائه وتلين وتتدلى ثم نرضها بيدك حتى تنحل ولا تتبين عند اللمس ، وأما الإخصاء بالشق والقطع فينبغى أن تمسك الحيوان وتعصر جلدة خصاه باليد اليسرى ثم تربط المعاليق وتشق على كل بيضة شقا واحدا حتى اذا برزت البيضتان فاقطعهما بعد أن تسلخهما ولا تترك عليهما من الصفاقات شيئا غير الصفاق الرقيق الذى يكون على الأوعية ، وهذا الضرب من الإخصاء خير من الذى يكون بالرض لأن الرض ربما بقى من الأنثيين شيئا فاشتبهى الحيوان الجماع ، ثم تعالج الجرح حتى يبرأ ،

CHAPTER SEVENTY. On the treatment of the hermaphrodite.

There are two kinds of male hermaphrodite: one has the appearance as of female pudenda with hair in the region of the perineum; the other has the same in the skin of the scrotum between the testes. Sometimes also urine is excreted through that which is in the skin of the scrotum.

There is also one kind among women, in which there is, above the female pudenda, on the pubes, what resembles the male organs. These are small indeed, but protuberant, one being like the penis and the two others like testicles.

This is the treatment of all three kinds, that is, two male and one female: the superfluous growths must be cut away so that every trace is destroyed; then the usual treatment for wounds should be applied until they are healed. As to the second kind, in man, where the opening is in the scrotum and the urine runs out of it, there is no operation for this, and no cure.

BOOK TWO. CHAPTER SEVENTY

Hypospadias in the male is evidently the disorder treated of in this chapter; with some kind of hermaphroditism in the female. Paulus is followed (vi. 69); he seems to have been the first of the classical writers to refer to the subject.

الفصل السبعون فى علاج الخنثى

الخنثى يكون فى الرجال على نوعين أحدهما أنه يظهر فيما يلى
الفضاء¹ او فى جلدة الخصى فيما بين الأنثيين شكل كأنه فرج امرأة
فيه شعر وقد يسيل البول من الذى يكون فى جلدة الخصى ،
5 وأما فى النساء فنوع واحد ويكون فوق الفرج على العانة² كمذاكير
الرجل³ صغار البتة ناتية الى خارج أحدهما كأنه قضيب الرجل والاثنان
كالأنثيين ،

وعلاج الأنواع الثلاثة النوعان من الرجال والنوع الواحد من النساء
ينبغى أن تقطع تلك اللحوم الزائدة حتى يعفى أثرها ثم تعالجها
10 بعلاج سائر الجراحات حتى يبرأ ، وأما النوع الثانى من الرجال
الذى يخرج منه البول الذى يكون فى جلدة الخصى فليس فيه عمل
ولا منه برؤ البتة ،

1. كمدا كخرج الرجل ويكون فيه 2. V^1A الخضا ، V العطاء ، M الفضى 1.
 H احسام

CHAPTER SEVENTY-ONE. On cutting the clitoris and fleshy growths in the female genitalia.

The clitoris may grow in size above the order of nature so that it gets a horrible deformed appearance; in some women it becomes erect like the male organ and attains to coitus. You must grasp the growth with your hand or a hook and cut it off. Do not cut too deeply, especially at the root of the growth, lest haemorrhage occur. Then apply the usual dressing for wounds until it is healed. As to the fleshy growth, that is, flesh growing in the cervix and filling it,⁴ and also often protruding like a tail (on which account some of the Ancients called it 'caudate disease'); this too you should cut away as you do for the clitoris, and dress until healed.

⁴ Presumably cervical polyp.

BOOK TWO. CHAPTER SEVENTY-ONE

This chapter on gynaecology is again a transcription of Paulus who himself followed Soranus on Gynaecology chapter 25. The first disorder appears to be an enlarged clitoris. Next is a condition called the caudate

disease; possibly a cervical fibroid or polyp with a long pedicle. Procidentia seems less likely because the single line devoted to it does not represent the severity of the operation.

الفصل الحادى والسبعون فى قطع البظر واللحم الناتى من فروج
النساء

البظر رتّما زاد فى القدر على الأمر الطبيعى حتى يسهج ويقبح
منظره وقد يعظم فى بعض النساء حتى ينتشر مثل الرجال ويصير الى
5 الجماع ، فينبغى أن تمسك فضل البظر بيدك او بصنارة وتقطعه ولا
تمعن فى القطع ولا سيما فى عمق الأصل لئلا يعرض نزف دم شمّ
تعالجه بعلاج الجراحات حتى يبرأ ، وأما اللحم النابت فهو لحم
ينبت فى فم الرحم حتى يعلأه ورتّما خرج الى خارج على مثال الذنب
ولذلك يسميه بعض الأوائل المرض الذنبى فينبغى أن تقطعه كما
10 تقطع البظر سوا وتعالجه حتى يبرأ ،

CHAPTER SEVENTY-TWO. On the treatment of unperforated female pudenda.

This condition is when a woman's pudenda have no opening or have only a tiny opening; it may be either congenital or acquired. The acquired sort is due to some preceding disease; either to a fleshy growth or to a membrane, thick or thin. It may be in the fundus of the uterus or in its walls or in the upper part or in the lower part; and it prevents intercourse, conception, and delivery; it often also hinders the menses. This is recognized by inspection by the midwife, if the obstruction be obvious and low. But if it be not visible she should palpate with her fingers or with a probe. And when the obstruction is due to a thin membrane near the labia you should lose no time in breaking it down. This is done by applying some sort of pad to the labia; then put both thumbs upon it. The woman should be upon her back with her legs spread wide apart; then the labia are to be stretched strongly till the thin membrane is ruptured and the obstruction is laid open. Then take wool soaked in oil and apply to the place, and let the woman engage in coitus every day lest the place close over. If the membrane be thick and strong you should incise it with a broad myrtle-leaf scalpel. But if the obstruction be due to a growth you should catch hold of it with two hooks and cut it away. And have at hand remedies for allaying haemorrhage without pain, such as acacia and dragon's blood and olibanum, all mixed with egg-white. Then use a cannula of lead to prevent the wound healing up too quickly. She should keep it in position for some days and employ a bandage of dry linen. Then treat with the usual healing dressings until it heals.

BOOK TWO. CHAPTER SEVENTY-TWO

Imperforate hymen, the subject of this chapter, was first written about by Celsus (vi. 28), who proposed catching hold of the obstructing tissue with forceps. Soranus (*Gynaec.* 33) has a chapter on the subject in which he

proposes the use of a speculum, enlarging on its use in the following chapter. Albucasis does not mention the speculum. Paulus was probably the immediate source for this chapter.

الفصل الثاني والسبعون في علاج الرتقا^٥

الرتقا^٥ هو أن يكون فوج المرأة غير مثقوب أو يكون الثقب صغيرا ويكون إما طبيعياً تولد به وإما عرضياً^٦ فالعرضي يكون من علة قد تقدمت وهو يكون إما من لحم نابت زائد أو صفاق رقيق أو كيسف^٧ ويكون إما في عرق الرحم وإما في جواربه وإما في أعلاه أو أسفله ويمنع من الجماع والحبل ومن الولادة وربما منع الطمث^٨ ومعرفة ذلك تكون بالنظر من القابلة إن كان السند ظاهراً قريباً فإن لم يكن ظاهراً فتفتشه بأصابعها أو بمرور^٩ فإن كان السند من صفاق رقيق وكان قريباً من الشفرين فبادر^{١٠} خرقه^{١١} وهو أن تجعل^{١٢} على الشفرين شبه الرفائد ثم تضع إبهاميك من اليدين جميعاً والمرأة على ظهرها منفرجة ساقاها ثم تعد^{١٣} الشفرين بقوة حتى تخرق الصفاق الرقيق ويفتح السند ثم تأخذ صوفاً وتشره في الزيت وتضعه على الموضع وتجامع المرأة كل يوم لكلاً يلتحم الموضع مرة أخرى، فإن كان الصفاق غليظاً كخيفسا فينبغي أن تشقه بموضع عريض تشبه ورقة آس، فإن كان السند من لحم نابت فملقه بالصنانير واقطعه ولكن مذك أدوية تسكن النزف من غير لدغ مثل القاقيا والشيان واللبان مجموعة ببياض البيض^{١٤} ثم تستعمل أنبوبة من رصاص واسعة لكلاً يلتحم الجرح سريعاً، تسكه إياها وتستعمل فتيلاً من كتان يابس ثم تعالج بسائر علاج الاندمال حتى يبرأ^{١٥}

١. V ساقها M. فتفتلها H. حرمة P، حده 2. BMV فتأخذ 1.
٢. ساقها V. فتفتلها H. حرمة P، حده 2. BMV فتأخذ 1.
٣. ساقها V. فتفتلها H. حرمة P، حده 2. BMV فتأخذ 1.
٤. ساقها V. فتفتلها H. حرمة P، حده 2. BMV فتأخذ 1.

Sometimes other growths of flesh arise in the uterus itself; you should cut away in this manner all except cancerous tumours; for a cancerous tumour arising in the uterus is under no circumstance to be treated with the knife.

20 وقد يعرض في الرحم نبات لحوم آخر فينبغي أن تقطع على
هذه الصفة ما لم يكن ورما سرطانيا فإن الورم السرطاني الذي يكون
في الرحم لا يعرض له بالحديد البتة،

CHAPTER SEVENTY-THREE. On the treatment of haemorrhoids and warts and red pustules arising in the female pudenda.

Haemorrhoids are an inflation of the heads of the blood-vessels leading to abundant and constant bleeding. When haemorrhoids are chronic they turn into warts. I have already mentioned in their place the kinds of wart and their symptoms. Now here I shall say which kinds permit of treatment and which do not. I begin by stating that haemorrhoids and warts in the depths of the uterus that are not palpable are not able to be treated operatively. Those at the orifice that are palpable you can treat. So you should get the woman into a cool place and then draw on the warts with forceps or catch hold with pieces of rough cloth, and cut them away from the roots. Then if that cause a flow of blood sprinkle with one or other of the powders that stop bleeding but are not corrosive, such as acacia or dragon's blood or olibanum or the like. Then raise her legs up against the wall for a while and then bring them down into cold water. And if the haemorrhage persist for a long time make her sit in an infusion of sumac and pomegranate rind and oak-galls and the like. Then take barley flour and beat it up with honey and vinegar, and apply to the back a plaster made of this. And if the bleeding cease, good; but if not, apply to the loins and breasts cupping-vessels without scarifying. Then take wool and dip it in the juice of red cynomorium or plantain or wild eglantine, together with syrup of oak galls, and apply to the place. And when the swelling has subsided treat the place with ointment until it heals.

Now red pustules resemble the heads of thyme, and are of rough appearance. All that appears on the surface should be cut away in the manner mentioned for treating warts; and dress the wounds until healed.

BOOK TWO. CHAPTER SEVENTY-THREE

This chapter, again, follows Paulus (vi. 71) who says the growths should be caught hold of with forceps and cut away with the *ἡμισπάθιον*. Aetius (xvi. 105) and Soranus (*Gynaec.* iv. 11) give the same directions. These two earlier authors mention also the speculum (see note to chapter 77) but not

the hemispathion. This last was most likely the half-size of the *σπαθίον* or two-edged scalpel used by the later Greek surgeons and not mentioned before Paulus' time. Albucasis does not specify any particular knife for this operation.

الفصل الثالث والسبعون فى علاج البواسير والثآليل والبثور الحمر

التي تعرض فى فروج النساء

أما البواسير فهو انتفاخ أفواه العروق حتى يسيل منها دم كثير دائم فإذا قدمت البواسير صارت ثآليل ، وقد ذكرت فى التقسيم 5 أنواعها وعلاماتها ونذكر هاهنا ما يقبل منها العلاج وما لا يقبل العلاج ، فأقول إن البواسير والثآليل اذا كانت فى عمق الرحم ولم تظهر للحس فليس فيها علاج بالحديد وما كان منها فى فم الرحم يقع عليها الحس فهى التى تعالج ، فينبغى أن تدخل المرأة فى بيت بارد ثم تمد الثآليل بمنقاش او بخزقة خشنة وتقطعها من أصولها 10 ثم تذر عليها عند نزف الدم من أحد الذرورات القاطعة للدم من غير تلذيع مثل القاقيا والشيان واللبن ونحوها ثم ترفع رجليها الى الحائط ساعة ثم تدليها فى ماء بارد فإن دام النزف فأجلسها فى طبيخ السماق وقشور الرمان والعفص ونحوها ثم خذ دقيق الشعير فاعجنه بعسل وخل وضد به على ظهرها فإن انقطع الدم وإلا فالزم 15 الصلب المحاجم والثديين² من غير شرط ، ثم خذ صوفة فاغمسها فى عصارة الطرايث او عصارة لسان الحمل او عصارة أغصان العليق مع شراب عفص وتلزم الموضع ، فإذا سكن الورم فعالج الموضع بالمرهم حتى يبرأ ،

وأما البشر الأحمر فهو يشبه رؤوس الحاشا خشن المنظر فينبغى 20 أن تقطع ما ظهر منه على حسب ما ذكرت فى الثآليل سوا¹ وتعالجه حتى يبرأ ،

1. MV, cett. تنزلها. 2. MP. والقدمين.

CHAPTER SEVENTY-FOUR. On the perforation of eruptions occurring in the uterus.

From time to time there occur in the womb various kinds of tumour, such as cancer and the stony tumour¹ and ulcer and abscess and gangrene and fistulae and varicosities and cracks and warts and inflamed tumours; all these diseases I have mentioned, with their varieties and their symptoms, in the appropriate section. But now in this treatise we must mention an inflamed tumour of the kind where there is a collection of pus, and the manner of its opening with the knife.

You should inspect it, and if the pain of the tumour is acute from the outset, with pulsation and inflammation and fever, and, if it is visible, you see that it is red, then do not be in a hurry to open, but treat it with applications helpful for suppuration till these symptoms have subsided. Then you should get the patient to sit in a chair having a double seat, lying back. She should put her feet together upon her abdomen, with the thighs apart and the arms joined under the knees and bound together in a suitable manner. Then the midwife should sit on the right side and employ the instrument for opening the orifice of the womb, which will be described later. When you are going to use this instrument, you should measure with a probe the depth of the womb so that the instrument be not introduced beyond this measure lest the patient be harmed; if the instrument be longer, pads should be put over the rim of the cervix to prevent the passage of its whole length. You must put the screw that runs in the instrument, in from the top and hold the instrument while your assistant turns the screw

¹ ? Fibroid.

BOOK TWO. CHAPTER SEVENTY-FOUR

The subject of swellings of the womb received some attention from Paulus (VI. 73) as an entity distinct from mere retention of the catamenia. But no previous classical writer has given such a full and accurate account of the various pathological conditions affecting the adult uterus. We can here distinguish clearly: carcinoma; fibroid; and noma; and he gives ulcer, which may mean a cervical erosion with inflammation; and abscess which seems to denote pyometra; and inflamed tumour which might refer to

Bartholin's abscess. It seems correct to say that Albucasis proposes operation for the last two only.

The instruments needed are: the speculum or *διόπτρα* first put forward by Soranus in his gynaecological treatise. This is discussed under chapter 77.

The scalpel that the operator next uses, having exposed the swelling with the speculum, is the usual *mibda'* with no distinctive description.

الفصل الرابع والسبعون فى بطّ الخراج الذى يعرض فى الرحم
 قد يعرض فى الرحم أنواع كثيرة من الأورام كالسرطان والورم
 المتحجر والقروح والديبيلة والآكلة والنواصير والبواسير والشقاق والثآليل
 والورم الحارّ وقد ذكرت جميع هذه الأمراض وأنواعها وعلاماتها فى
 5 التقسيم فينبغى أن نذكر فى هذه المقالة الورم الحارّ الذى يعرض
 فى الرحم اذا كان من الأورام التى تجمع مدة كيف يكون بطّها
 بالحديد ،

فينبغى أن تنظر فإن كان وجع الورم فى ابتداءه حادّا مع
 ضريان والتهاب وحمى ورأيته أحمر إن وقع عليه الحسّ فلا تعجل
 10 بيّطه وعالجه بما يعين على النضج حتّى اذا سكنت هذه الأعراض
 فحينئذ ينبغى أن تجلس المرأة على كرسى له مقعدان وتستند على
 ظهرها وتجمع رجليها الى ناحية أسفل البطن وتكون فخذاها
 منفرجتين وتصير ذراعيها تحت ركبتيها وتربطهما برباط يصلح لذلك ثمّ
 تجلس القابلة من الجانب الأيمن وتستعمل الآلة التى يفتح بها فم
 15 الرحم التى تأتى صورتها فيما بعد ، وينبغى اذا أردت استعمال
 هذه الآلة أن تقدّر بعروء عمق رحم المرأة لكّلا يكون الذى يدخل من
 الآلة أكثر من عمق الرحم فيؤذى العليّة فإن كانت الآلة أكثر من
 العمق فينبغى أن توضع رفائد على شفة² عنق الرحم لتنع دخول
 الآلة كلّها فى عمق الرحم وينبغى أن تصير اللولب الذى يجرى فى
 20 الآلة من الجانب الأعلى وأنت تمسك الآلة ويدير الخادم اللولب حتّى

1. P. <فم> 2. B, شف, P, سفت cett.

until the entrance of the uterus is opened. When the abscess is exposed, and on manual palpation is found to be thin and soft, you should make an incision at its head with a broad scalpel. And when all the matter is evacuated you should place on the wound a soft wick soaked in oil of roses or green oil with some styptic quality,¹ and let it come outside from the incision into the cervix uteri. Over the area of the uterus and pubes there should be clean wool soaked in an infusion of mallows. Then after two days dress with a suitable ointment until healed. Sometimes also both the wound and the uterus are washed out with a douche of honey and water, then of a decoction of liquorice² root or long aristolochy; then go back to the ointment. But if the lesion be hidden in the depths of the womb then you will have to abstain from operative treatment but carry out treatment as spoken of in its place.

¹ B adds 'and let the wick be rather long so that both ends may remain outside the vulva'.

² BV 'lily'.

يفتح عنق الرحم، فإذا ظهر الخراج ولمس باليد وكان لنا رقيقا
 فينبغي أن تشقه عند رأسه بمبضع عريض فإذا استفرغت المدّة كلّها
 فينبغي أن تصير في الجرح فتيلة لينة مغموسة في دهن الورد أو زيت
 أخضر فيه بعض القبض³ وتصير الفتيلة خارجا من الشق في عنق الرحم
²⁵ ويصير من خارج على الرحم وعلى العانة صوف نقى مغموس في ماء قد
 غلى فيه خبّازي ثمّ تعالج بعد يومين بالمرهم الذي يصلح لذلك حتّى
 يبرأ، وقد يغسل الرحم والجرح بأن يحقن بالماء والعسل ثمّ بما قد
 غلى فيه أصل السوس⁴ أو زراوند طويل ثمّ تعود الى المرهم، فإن كان
 الخراج متواريا داخلا في الرحم فينبغي أن تمتنع من علاجه بالحديد
³⁰ بل يعالج بما ذكرنا في التقسيم،

B. >ويكون في الفتيلة بعض الطول لكي تبقى طرفاها خارج الفرج < 3.

4. BV. السوسن. 5. P, cett. الحرج.

CHAPTER SEVENTY-FIVE. On the training of midwives in how to treat living foetuses when not brought forth in the natural manner.

To begin with, the midwife must know the manner of normal labour. Among the signs of it are these. If you see the woman strain her abdomen and desire to breathe more air, and the pangs come easily to her and she hastens to deliver the child, by this you may know that the labour will follow a natural course and that the presentation will be vertex with the afterbirth, either together with the child or hanging by the umbilical cord. And when you observe these signs it will be necessary to put pressure upon the abdomen to bring forth the foetus quickly. For when it presents the vertex the afterbirth comes down with it and she is thoroughly cleansed of those superfluities. But a delivery that is contrary to this is unnatural and wrong. Sometimes the infant is delivered by its feet¹; or by its hands² before either head or feet; or a single hand or foot; or the head comes out together with a foot. Or it comes out all twisted, often with the nape of the neck first; or in other wrong positions. So the midwife must have wisdom and dexterity and be skilled in all these cases and beware of failures and mistakes. I shall explain the technique in these modes of delivery so that she may be instructed and may be acquainted with them all.

When the foetus comes out by the vertex in the normal manner and yet the delivery is with great difficulty for the woman and you see that her strength is getting exhausted, then make her sit on a seat and have her held firmly, and foment her womb³ in a decoction of fenugreek and in bland oils. Then the midwife should take between two fingers a little scalpel and make an incision in the foetal membrane or open it with the finger nail, to allow the contained waters to flow out; and put pressure upon the woman's

¹ P 'belly'.

² AH 'body'.

³ AHP 'feet'.

BOOK TWO. CHAPTER SEVENTY-FIVE

The scalpel held between the fingers to open the bag of waters is most likely one of the thin blades illustrated (figs. 149 and 150) a little later, for dismemberment of a foetus.

الفصل الخامس والسبعون في تعليم القوابل كيف يعالجن الأجنة الأحياء اذا خرجوا على غير الشكل الطبيعي

ينبغي للقاتلة أن تعرف أولا شكل الولادة الطبيعية فممن علاماتها اذا رأيت المرأة تتزخر الى أسفل وتشتاق أن تشتت الهوا⁵ ويهرون عليها ما هي عليه من النفاس ويسرع خروج الجنين فاعلم أن هذه الولادة تكون على الشكل الطبيعي ويكون خروجه على رأسه والمشيمة معه او معلقة من سرتيه، فاذا رأيت هذه العلامات فينبغي أن تعصر بطنها لكيما يخرج الجنين بسرعة فإنه اذا نزل على رأسه نزلت المشيمة معه وتتلف من تلك الفضول تنظيفا حسنا، وما خلا¹⁰ هذه الولادة فهي غير طبيعية مذومة لأنه قد يخرج الجنين على رجله ويخرج يديه قبل رأسه ورجليه ويده الواحدة او رجله الواحدة او يخرج رأسه ويده او يخرج منطويا ورثا انقلب على قفاه ونحو ذلك من الأشكال المذومة، فينبغي للقاتلة أن تكون حاذقة لطيفة بهذه الأشياء كلها وتحذر الزلل والخطأ. وأنا مبين كل شكل منها وكيف¹⁵ الحيلة فيه لتستدل بذلك وتقف عليه،

اذا اخرج الجنين على رأسه الخارج الطبيعي واشتد على المرأة ذلك وسر عليها المطلق ورأيت قوتها قد ضعفت³ فأجلسها على كرسي وأمر نساء بضبطها وكند رحمها⁴ بالحلبة المطبوخة وبالأدهان الرطبة، ثم تدخل القاتلة بين أصابعها مضعا صغيرا فتشق به المشيمة او²⁰ تشقها بظفرها حتى يسيل ما فيها من الرطوبة وتعصر بطن المرأة

AH لونها قد ضعف. 3. AH. بدنه M، على يديه B، يده P. 1.
P، رجلها AH، رجلها P. 4.

abdomen until the foetus comes down. But if it will not come down then the woman should have an enema of mucilage of fenugreek with oil of sesame. Then bid her bear down after the enema, and with ptarmica stimulate her to sneeze; and close her mouth and nose for a while and the foetus will quickly come out.

If the hands of the foetus present, you should slowly and gently push them back; and if they will not go back then place the woman upon a seat, have her feet raised and meanwhile shake the seat; but the woman should be held lest the shaking cause her to fall off. But if the two hands will not go back and the foetus is dead cut them off and draw out the remains. Or tie tapes to the hands and pull on them evenly and it will come out.

Foot presentation: when the foetus presents feet first you should raise them both; then you should very gently turn the foetus so as to straighten it. Then take one of its feet and stretch it gently.¹ When they come down as far as the hips, bid her bear down, make her sneeze with ptarmica, and it will come out. But if it will not come out with these means we have described, you should return the foetus gently until you have placed it in the natural position; then it will come out easily. But if it defies all that we have described, take mucilage of marsh mallow and fenugreek and oil of sesame and dissolved gum, and pound them all well together in the mortar and anoint the woman's pudenda and lower abdomen; then make her sit down in warm water reaching to the costal margin. And when you see the lower parts are softened, make a suppository of myrrh and let her introduce it; and when she has had the suppository in for a while make her sneeze, stopping her nose and mouth; and press gently upon the abdomen; then will the foetus immediately emerge.

¹ Something is amiss with the text. Either 'one' should be 'both', or we must assume an omission of, e.g., 'Then do the same with the other'. B reads 'take one of its feet and stretch them both'.

حتى ينزل الجنين، فإن لم ينزل فينبغي أن تحقن المرأة بلعاب
الحلبة مع دهن الشيرج ثم تأمرها بعد الحقنة أن تتزجر وتعطسها
بالكندس وتمسك فمها وأنفها فإن الجنين يخرج من ساعته،
فإن خرجت يدا الجنين أولاً فينبغي أن تردّهما برفق قليلاً
25 قليلاً فإن لم تتأتا للدخول فضع المرأة على منبر وترفع رجليها الى فوق
ثم تهز المنبر على الأرض والمرأة تمسك كيلاً تقع عند الهز فإن لم
تدخل اليدان ومات الجنين فاقطعهما واجذب باقى الجنين او اربط
يديه بخرقة واجذبهما باعتدال فإنه يخرج،
خرج الجنين على رجليه، اذا خرج الجنين على رجليه فينبغي
30 أن تدفعهما الى فوق ثم تحوّل الجنين قليلاً قليلاً⁶ حتى تسويه ثم
تأخذ إحدى رجليه فتمدّها⁷ قليلاً قليلاً⁶ فإذا خرجتا الى الفخذين
فأمرها أن تتزجر وتعطسها بالكندس فإنه يخرج، فإن لم يخرج بما
وصفنا ولا فردّ الجنين قليلاً قليلاً حتى يصيره على الشكل الطبيعي
فإنه يخرج حينئذ خروجاً سلساً، فإن امتنع بما وصفنا كلّ فخذ من
35 لعاب الخطمي ولعاب الحلبة ودهن الشيرج وصفنا محلولا واضرب
الجميع في الهاون ضرباً جيّداً ثم اطل به فرج المرأة وأسفل بطنها ثم
أجلسها في ماء فاتر حتى يبلغ الشراسيف، فإذا رأيت أنه قد لان
أسفلها فاصنع لها شيافة من مرّ وتحمّلها فإذا أمسكت الشيافة ساعة
فأجلسها على الكرسي ثم عطسها وسدّ فمها وأنفها واعصر أسفل
40 بطنها عصراً رقيقاً فإن الجنين يخرج من ساعته،

5. B. فتعدّها. 6. M, om. HP. حتى يسويه. 7. PV. تحرك.

Presentation of the foetus by knees and hands: when it comes out after this manner you should seek to introduce the hands slowly; then let the woman lie back on her shoulders with her feet hanging down, reclining on a couch with her hands clasped together; then very gently put pressure upon the abdomen; then take away the pillows from under her feet until her lower parts are vertical; and if the foetus does not come out then, take both her feet and shake them violently; then press upon her costal margin until the foetus ascends; then let the midwife insert her hand and put the foetus in the right position, very gently, and bid the woman bear down, until the infant is born.

Presentation by the side with one hand hanging down: attempt to manœuvre the hand back again; but if you cannot reduce it then make the woman stand up and walk. But if she cannot walk then have her lie on a couch, and agitate her feet violently. Then employ the ointment which I described among the mucilages. If parturition begins, make her sit upon a seat and attempt the reduction of the hand and version of the foetus to the natural position, and make the woman sneeze and bear down until the child is born.

Presentation on the back, with hands outstretched and face towards the mother's back: the midwife should take the infant's hand and then turn him very slowly, and gently rectify his position. Then when he is in the correct position apply to the maternal passage the oil and mucilage prescribed. Then bid the woman move gently and when she has done so make her sit down upon a seat and bid her lean over to her right side; then bid her bear down, and with ptarmica make her sneeze; then the foetus will come forth.

The foetus presenting laterally, doubled up: when it presents at the os in this manner together with the membrane, open the membrane with your

خرج الجنين على ركبته ويديه، إذا خرج على هذه الصفة فاحتل في إدخال يديه قليلا قليلا ثم تستلقى المرأة على قفاه وتدلى رجليها الى أسفل وهي مضطجعة على سرير وتضم يديها ثم اعصر فوق بطنها قليلا قليلا ثم أخرج ما تحت رجليها من الوسائد حتى تكون منصوبة الأسفل فإن لم يخرج الجنين فخذ رجليها جميعا فحركهما حركة شديدة ثم اعصر فوق الشراسيف قليلا قليلا حتى يبعد الجنين الى فوق ثم تدخل القابلة يدها وتسوى الجنين قليلا قليلا وأمر المرأة أن تتزحزح حتى يخرج الجنين،

50 خرج الجنين معترضا مدليا لإحدى يديه، احتل في رث يده فإن لم تقدر على رثها فأقم المرأة واجعلها تعشى فإن لم تقدر على المشي فتضطجع على سريرها وهز ساقيها هزا شديدا ثم استعمل اللطوخ الذي وصفت من اللعابات فإن أخذها الطلق فأجلسها على كرسى ثم عالج في رث اليد وتسوية الجنين على الشكل الطبيعى وعطس المرأة وأمرها أن تتزحزح حتى يخرج،

55 خرج الجنين على قفاه باسطا يديه ويكون وجهه الى ظهر أمه، ينبغي أن تسك القابلة يد الجنين ثم تحوله قليلا قليلا وتسويه برفق فإذا استوى فاحمل على قبلها ما وصفنا من الدهن واللعابات ثم مرها أن تتحرك قليلا قليلا فإذا فعلت ذلك فأجلسها على الكرسي وأمرها أن تعيل الى الجانب الأيمن ثم مرها أن تتزحزح وتعطسها بالكندس فإنه يخرج،

خرج الجنين منتصبا على جنب، إذا نزل الى فم الرحم على هذه الصفة مع المشيمة فشق المشيمة بظفرك حتى تنفث من الرطوبة

finger nail and let out the waters. And if it adhere over the infant's face and neck, cut it away from the umbilicus lest he be strangled and die. Then push the foetus back till it is in the proper position, and bid the woman bear down a few times until the foetus comes forth.

The birth of twin or multiple foetuses: you should know that it is a common occurrence for twins to be born alive, and sometimes three or four infants, but this is a rarity; while five after this manner is altogether unnatural and they never live. Although they may be more than one, they are enveloped in a single membrane but separated one from the other by a dividing membrane joined to the umbilicus of each one. And when they are born they may come in the natural easy manner of a single foetus; or by any abnormal presentation such as we have described. And if one of them be born with difficulty, presenting in some unnatural manner as described, the treatment is also as described. Let the midwife be delicate and do whatever she does gently and calmly, adopting in each case whatever technique it demands that will conduce to a safe result.

A note on the foetuses that may be formed in the womb and abort. Sometimes in the womb there may form one or two or three or four or five or six or seven or more than ten. And I can vouch that one woman had an abortion of seven foetuses and another woman of fifteen, all of them formed. This is by the decree of the Almighty, the Wise. And all this should be part of the midwife's knowledge, for one day she may meet such a case and she must deal with it in the proper way.

فإن تعلقت على وجه الجنين وعنقه فاقطعه من السرة لئلا يحتنق⁸
فيموت ثم ادفع الجنين الى داخل حتى يصيره على ما ينبغي وأمر
65 المرأة أن تتزجر مرات فإنه يخرج خروجاً سهلاً،

خرج التوأمين أو أجنة كثيرة، اعلم أن التوأمين كثيراً ما
يولدون وقد تولد ثلاثة أو أربعة ويعيشون إلا أن ذلك في النادرة
وأما الخمسة فهو شيء خارج عن الطبيعة لا يعيشون البتة، وتحيط
بهم وإن كثروا مشيمة واحدة ويفترقون بصفاق حاجز بينهم مربوط في
70 سرة كل واحد منهم، وقد تخرج كما يخرج الجنين الواحد خروجاً
طبيعياً سهلاً ويخرجون خروجاً مزموماً كما وصفنا فإن عسر بعضهم عند
الولادة وصار الى ما قلنا من الأشكال غير الطبيعية فعالجه كما وصفنا،
ولتكن القابلة لطيفة⁹ وتفعل ما تفعله برفق وتوان¹⁰ وتتحيل على كل
شكل بما يتهيأ لها من الحيلة المؤدية الى السلامة،

75 ذكر ما يتصور في الرحم من الأجنة فيسقطون، قد يتصور في
الرحم واحد واثنان وثلاثة وأربعة وخمسة وستة وسبعة وأكثر من عشرة
وقد صَحَّ عندي أن امرأة أسقطت سبعة وأخرى خمسة عشر كلهم
متصورين ذلك بتقدير العزيز العليم، فهذا كله ينبغي أن يكون في
علم القابلة فربما يقع إليها مثل ذلك يوماً ما فتقابل به بما ينبغي،

8. MV, cett. يحتبس. 9. M. في افعالها رقيقة مواتية. 10. H, وتان. cett. وتوانى.

CHAPTER SEVENTY-SIX. On the extraction of the dead foetus.

When you have dealt with a dead foetus by those methods mentioned in their chapter, and it does not come out, and you are compelled to operate, you should examine to see if the woman be in a healthy state and not having any disease on account of which you might entertain a fear for her life. The woman should lie on her back on a couch, her head tilted back and her legs raised. An assistant on either side should hold her down firmly or she should be bound down to the couch, lest the body be drawn out of position in extracting the foetus. Then the opening should be anointed with moistening oils and with mucilage of marsh mallow and fenugreek and with linseed. Then the midwife should anoint her hand with these oils and mucilages and gently introduce it into the vagina and with it locate a place in the foetus to fix hooks in. The suitable places for that: consider, and if the foetus present the vertex then she should fix the hooks in its eyes or in the neck or in the mouth or palate or beneath the chin, or the collar-bone, or about the ribs, or beneath the false ribs. But if it present the feet let the hooks be fixed in the pubic region or middle ribs. She should hold the hook in the right hand and put the curved part between the fingers of the left hand, and introduce the hand gently and fix a hook in one of the places before mentioned, driving it in until it comes to a hollow. Then opposite it let her fix another or a third if need be,¹ so as to give even traction, not pulling to one side. Then she should pull evenly, not just in a straight line but with the foetus moved from side to side so that its exit may be eased, as is done in extracting a tooth. From time to time the tension must be relaxed, and if any part of it be held up the midwife must oil some of her

¹ Lit. 'if you need'. Our author sometimes forgets, in his gynaecological chapters, that the recipient of his instructions is properly a third person feminine.

BOOK TWO. CHAPTER SEVENTY-SIX

Extracting a dead foetus was unquestionably an early operation. Celsus' account (VII. 29) may be the earliest. He mentions two kinds of hook, one being a kind of decapitator. The pseudo-Hippocratic *Γυναικείων* mentions nearly all the instruments given in this

chapter; as also do other later writers such as Soranus and of course Paulus, giving operative directions similar to those of Albucasis. The instruments are illustrated and discussed in the following chapter.

الفصل السادس والسبعون فى إخراج الجنين الميت

إذا عالجت الجنين الميت بما ذكرته فى التقسيم من العلاج فلم يخرج واضطرك الأمر¹ الى العمل² باليد فينبغى أن تنظر فإن كانت المرأة صحيحة القوة وليس بها شئ من الأعراض التى يخاف عليها 5 منها التلف فينبغى أن تستلقى المرأة على سرير على ظهرها ويكون رأسها مائلا الى أسفل وساقاها مرتفعتين وخادم يضبطها من كلتي الجهتين او تربط الى السرير لئلا ينجذب جسدها عند مد الجنين، ثم يرطب فم رحمها بالأدهان الرطبة مع لعاب الخطمى والحلبة ويزر الكتان ثم تدهن القابلة يدها بهذه الأدهان واللعابات ثم تدخلها 10 فى الرحم برفق ثم تطلب بها مكانا تغرز فيه الصنارات من الجنين، والمواضع الموافقة لذلك، انظر فإن كان الجنين متأتيا أن ينزل على رأسه فتغرز الصنارات فى عينيه او فى قفاه او فى فمه او فى حنكه او تحت لحيته او ترقوته او فى المواضع القريبة من الأضلاع او تحت الشراسيف، وأما إن كان نزوله على رجله ففى العانة والأضلاع 15 الوسطى، وينبغى أن تمسك الصنارة باليد اليمنى وتصير عطفها فيما بين أصابع اليد اليسرى وتدخل² اليد برفق وتغرز صنارة فى بعض تلك المواضع التى ذكرنا حتى تصل الى شئ فارغ ثم تغرز قبالتها صنارة أخرى او ثالثة إن احتجت ليكون الجذب متساويا ولا يميل الى جهة ثم تمد مدا مستويا ولا يكون المد على استقامة فقط بل يحرك الى كل جهة 20 ليسهل خروجه كما يصنع بالضررس عند قلعه وينبغى فيما بين ذلك أن يرخى المد فإن احتبس منه جهة فينبغى أن تدهن القابلة ببعض

1. P, om. cett. 2. M, <مع> cett.

fingers and introduce them to one side to manipulate the retained part. And if a part only of the foetus come away she should shift the hooks to other parts a little higher up, and so on, until the whole of the foetus has come out.

If the hand should come out before any other part and it is impossible to reduce it on account of the pressure, then a tape should be wound round it and she should pull on it until it is all out; then it should be cut off at either the carpal or the elbow joint. In the same manner should the other hand be dealt with, and the feet.

If the foetal head be large and it is tightly squeezed in exit, or if there be a collection of fluid in the head, you should introduce between your fingers a spike-shaped scalpel and split the head to let the water out; or you should smash it with the instrument called cephalotribe which will be illustrated, together with figures of the other instruments, in the chapter following. In the same manner you act if the foetus have a naturally large head: either you should cut the skull open or smash it with the cephalotribe as we said; then you should draw out the bones with forceps. If the head comes out and the foetus is held up at the collar bones, an incision should be made to let out the humidity in the thorax, for the thorax will then shrink. But if the thorax does not shrink and is not disposed to emerge then you should cut off pieces in any manner possible.

If the lower belly be swollen or dropsical then you should make an opening to draw out all the fluid. If the foetus present the feet then the extraction will be easy and it will be a simple matter to guide it to the maternal opening. If it be stuck about the abdomen or thorax then pull on it with a cloth wound around your hand and cut an opening in the abdomen or thorax to allow the contents to flow out. If all the limbs are

الأصابع بالدهن وتدخلها من جهة لتدير بها ما احتبس فإن خرج بعض الجنين فتقل الصنائير الى مواضع آخر هي أرفع قليلا تفعل هذا حتى يخرج الجنين كله،

25 فإن خرجت يد قبل غيرها ولم يمكن ردها لانضغاطها فينبغي أن تلف عليها خرقة ثم تجذبها حتى اذا خرجت كلها قطعنها إما في مفصل الكف أو في المرفق وهكذا ينبغي أن تفعل في اليد الأخرى وفي الرجلين³،

فإن كان رأس الجنين كبيرا وعرض له ضغط في الخروج أو كان في رأسه ماء مجتمع فينبغي أن تدخل فيما بين الأصابع مبضعا شوكة وتشق بها الرأس فيخرج الماء أو تشدخه بالآلة التي تسمى المشداخ⁵ التي تأتي صورتها مع صور سائر الآلات في الباب الذي بعد هذا وكذلك تفعل إن كان الجنين عظيم الرأس بالطبع فينبغي أن تشق الجمجمة أو ترصها بالمشداخ كما قلنا ثم تخرج العظام بالكلاسيب، 30 فإن خرج الرأس وانضغط عند الترقوة فليشق حتى تنصب الرطوبة التي في الصدر فإنه ينضم الصدر حينئذ فإن لم ينضم الصدر ولم يتأتى للخروج فاقطع قطعاً على ما يمكنك،

فإن كان أسفل البطن وارماً أو كان به حبن فينبغي أن تبطنه حتى تسيل الرطوبة منه، 35 فإن كان الجنين على رجليه فإن جذبه سهل وتسويته الى فم الرحم هين، 40 فإن انضغط عند البطن أو الصدر فينبغي أن تجذبه بخرقة قد لفتها على يدك وتشق البطن أو الصدر حتى يسيل ما فيهما، فإن انتزعت سائر الأعضاء وارتجع الرأس

M. الشداخ. 5. cett. و V. 4. M. أو في الرجل ان خرجت. 3.

cett. الرأس قطعاً P, الصدر الصدر M. 6.

removed but the head is turned backwards and is jammed, the midwife should introduce her left hand and, if the mouth of the womb is open, should put the hand into the cervix of the womb and investigate the head and, with her fingers, draw it down toward the opening and fix a hook or two in it, and extract it with these. If it should be that the mouth of the womb is closed on account of an abscess, then one must not be rough with it but should use in this case instillations of moistening greasy substances; plasters also should be applied; and the woman should sit in a bath of softening and moistening waters.

If the foetus present laterally and it is possible to reposition it, there should be applied the things mentioned for a living child. But if this be not possible then it should be cut away piecemeal and extracted. It is necessary that not a scrap of the afterbirth be left behind in the womb. When you have completed your treatment then also apply those treatments we have mentioned for abscesses occurring in the uterus. If haemorrhage occurs, the woman should be put into styptic fluids and the usual treatment applied.

Now I myself once saw a woman who had become pregnant and the foetus had then died *in utero*; then again she conceived and the second foetus also died; and after a long while she got a swelling in the umbilicus which grew and eventually it opened and began to produce pus. I was called in to attend her, and I treated her for a long while but the wound did not heal up. So I applied to it certain very strongly drawing ointments, and then a bone came away from the place; then a few days passed and another bone came out; and I was mightily astonished at this, seeing that the abdomen is a place where there are no bones. I formed the opinion that these were bones from a dead foetus. So I investigated the place and got out many bones belonging to the head of the foetus. I continued this procedure and got a great number of bones out of her, the woman being in the best of health;

واحتبس فلتدخل القابلة اليد اليسرى فإن كان فم الرحم مفتوحا
فتدخل اليد في عنق الرحم وتطلب بها الرأس وتجذبه بالأصابع الى
45 فم الرحم ثم تدخل فيه صنارة او صئارتين وتجذبه بها ، فإن كان فم
الرحم قد انضم لورم حارّ عرض له فلا ينبغي أن تعنف عليه بل
ينبغي حينئذ استعمال صبّ الأشياء الرطبة الدسمة وتستعمل الأضدة
وتجلس في المياه التي ترخى وترطب ،

وأما إن كان الجنين على جنبه فإن أمكن أن يسوى فليستعمل ما
50 ذكرنا في الجنين الحيّ فإن لم يمكن ذلك فليقطع قطعاً ويخرج ،
وينبغي أن لا تترك شيئا من المشيمة داخلا البتّة ، فإذا فرغت من
علاجك فاستعمل ما ذكرنا من العلاج في الأورام الحارة التي تعرض
في الأرحام ، فإن عرض نزف دم فلتنزل في المياه القابضة وتستعمل
سائر العلاج ،

55 ولقد شاهدت امرأة كانت قد حبلت فمات الجنين في جوفها ثم
حبلت عليه مرة أخرى ثم مات الجنين الآخر أيضا فعرض لها بعد
زمان طويل ورم في ملتسمها وانتفخ حتى انفتح وجعل يمدّ القحيح
فدعيت الى علاجها فعالجتها زمانا طويلا فلم ينختم الجرح فوضعت
عليه من بعض المراهم القويّة الجذب فخرج من الموضع عظم ثم مضى
60 لها أيام فخرج عظم آخر فعجبت من ذلك اذ البطن موضع لا عظم
فيه فقدّرت أنّها من عظام الجنين الميت ففتشت الجرح فأخرجت منه
عظاما كثيرة من عظام رأس الجنين فلم أزل أتبع ذلك حتى أخرجت
منها⁷ عظاما كثيرة والمرأة في أفضل أحوالها ولقد عاشت كذلك زمانا

7. BV, om. cett.

indeed she lived for quite a while like that, with a little pus being exuded from that place. I bring forward this uncommon occurrence here since it gives knowledge and help about the sort of treatment that the doctor who practises surgery may contrive.

يمدّ من الموضع قيح يسير وإنّما آتيت هاهنا هذه النادرة لأنّ فيها
65 علما ومعونة لما يحاوله الطبيب الصانع بيده من العلاج ،

CHAPTER SEVENTY-SEVEN. On the forms of instruments necessary for extracting the foetus.

Speculum¹ for opening the entrance of the womb (fig. 140). This is the

¹ The Arabic is *lawlab*, the same word as that translated by 'screws' (in the dual form) in the following line and by 'screw speculum' in the sentence immediately preceding fig. 142. It is used in classical Arabic for 'spiral', 'spout', and 'spigot' as well as 'screw'. See Dozy (II, pp. 558-9) for additional meanings, including 'metal spring', 'valve', 'crane', 'vertebra', and 'axle'. The word is written inside fig. 141 in M, although there is nothing resembling a screw in that instrument. It is therefore possible that *lawlab*, to the scribe of M, meant 'speculum' of whatever form; but it would be rash to base any such assertion on what may be a slip.

BOOK TWO. CHAPTER SEVENTY-SEVEN

Gynaecological and obstetrical instruments are the subject of this chapter.

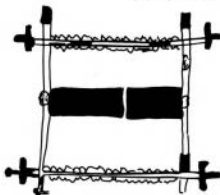
Vaginal speculum. Archigenes (2nd century A.D.) quoted by Aetius, discoursing upon *Abscessus oris uteri chirurgia*, wrote: . . . *assideatque a dextris chirurgus et per dioptram instrumentum, pro aetate commodum ad pudendi diductionem speculetur, et per speculum sinus muliebris profunditatem dimetiatur . . . oportet autem tibiam immittere, cochlea ad supernam vergente, et dioptram quidam a chirurgo teneri, cochleam vero per ministrum circumverti ut diductis tibiae plicis sinus distendatur. . . .* (Note: *tibia* here means the shank or flute of the speculum). Soranus of Ephesus, one of the earliest of specialists, wrote a gynaecological text-book and devoted a chapter to the use of the vaginal speculum (chapter 34—*περὶ διοπτρισμοῦ*). This is probably contemporary with the foregoing extract from Archigenes; the problem of priority is unsettled. He begins with an account of the lithotomy position, maintained by a kind of Clover's crutch: . . . *reliqua fasciae sub anquilas missa ad manus adligabis ita ut patefacti pedes ventri eius cohaereant.* Then, the blades (*priapiscum*) of the speculum, having been lubricated, are introduced . . . *iubere etiam ministro ut, aperiendo organo, axem torquere incipiat, ut paulatim partes ipsae aperiantur.* It should be mentioned that this extract is from Moschion's Latin translation of Soranus, whose original Greek is now lost. There can be no reasonable doubt

that Archigenes' *cochlea* and Soranus' *axis* are essentially the same and that they describe the same instrument.

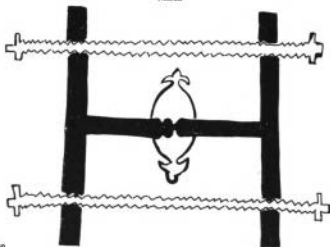
The specula described and illustrated by Albucasis are accompanied by descriptive terms rather than actual names. The first one (fig. 140) is to be interpreted thus: it has two cross-pieces whose ends are each linked by a screw passing through threaded holes; and by revolving these screws the cross-pieces are approached or separated according to the direction of rotation. Thus two shanks (*tibiae*) attached to the cross-pieces at right angles, and parallel to one another, are drawn together or separated. The shanks or blades constituting the speculum are first brought together to be introduced into the vagina; and then, by appropriate rotation of these screws, the blades are separated and so open up the passage for surgical inspection or operation. The Marsh drawing, rather roughly executed, shows the instrument by itself, with the shanks, filled in in black in the middle, represented in perspective, pointing away from the observer. The little cross-pieces at the end of the screws represent handles for the assistant to grasp in turning the screws. The Huntington sketch is more carefully drawn but essentially the same, and apparently shown as placed in position at the entrance to the vagina. Both the description and the illustration suggest that the Arab model differed materially from that of the classical authors quoted already, who de-

الفصل السابع والسبعون فيه صور الآلات التي يحتاج اليها فنى
إخراج الجنين

صورة لولب يفتح به فم الرحم:



Marsh



Huntington

Fig. 140

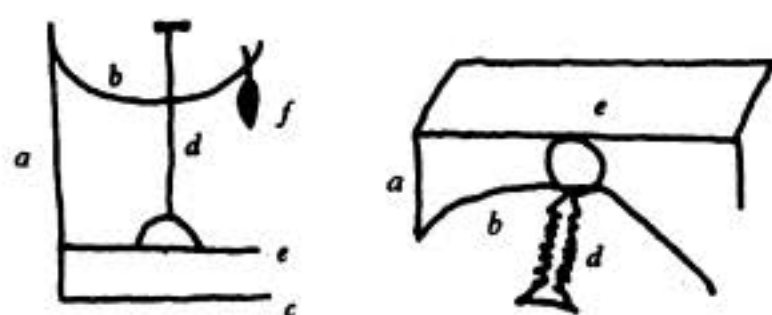
1. AV, فنى cett.

type of instrument with which books are pressed. It has two screws at either end of two pieces of wood; but this instrument should be more slender than a book press, and should be made of ebony or boxwood. The width of each piece of wood should be about two fingers' breadth and the thickness about one, and the length a span and a half; and in the middle of both pieces of wood, firmly attached, should be two projections made of the same kind of wood, each half a span long or a little more, and two fingers wide or a little more. It is these two projections that are to be introduced into the vagina so that it is thereby opened when you turn the screws.

Another instrument, for the same purpose, but smaller and lighter (fig. 141). It is made of ebony or boxwood in the shape of forceps, but at the end it has two projections as you can see; and the length of each is about a span and the breadth two fingers. When you wish to open the womb with this, make the woman sit on a couch with her legs hanging down, parted; then introduce the two projections pressed together into the orifice of the womb while you hold the end of the instrument lower down between her thighs;

scribe only one screw. This as a matter of fact holds good for Albucasis' second variety. But actual instruments discovered, both in the Naples Museum, show that the Roman type worked on an entirely different principle. The contrast is best appreciated by turning to the illustrations given in Milne (plates 47 and 48); the movement of the jaws in expansion is obtained by screwing up and down a sliding piece that works along the curved shanks carrying the blades. Also the blades, when closed, form a tube of a size enabling the instrument conveniently to be inserted into the part; the Arab speculum, when closed, does not appear to take this form.

Figure 142 is another variety of the screw speculum. Albucasis, in introducing it (see preceding pages), simply states that it is another type mentioned by the Ancients, but gives no further description.



The details of the Marsh drawing seem reasonably simple (see the diagram above). It is a speculum on simpler lines than the first, the jaws being opened and closed by the operation of a single screw (*d*) instead of two. This works in a fixed arm (*b*) of the main shaft (*a*) of the instrument, along which the sliding arm (*e*) is worked up and down by the screw. This arm (*e*) forms one blade of the speculum; the other blade is formed by the fixed second arm (*c*). The puzzling tassel-like object marked (*f*) in the Marsh drawing is actually not part of the speculum. Careful examination of MS. shows there is a caption to it, partly obscured by the drawing of the upper shaft, probably reading, as shown in footnote, 'figure of a scalpel with two sides'. A scalpel here, in such a situation, seems quite out of place; unless it is intended to represent how a scalpel would be passed through the speculum into the female passage in order to dismember the foetus. When we come to the Huntington drawing the meaning is even less obvious. The upright (*a*), the arm (*b*), and the screw (*d*) seem to correspond with the Marsh items except that the screw works upward to close the blades and is shown as screwed almost up to the limit, drawing the blades apart. The ring at its upper end may

هذا² المزنم الذى تسوى به الكتب سواء له لولبان فى طرفى
 5 الخشبتين إلا أن هذا اللولب ينبغى أن يكون أطف من المزنم وأن
 يكون إما من آبنوس وإما من خشب البقس ويكون عرض كل خشبة فى
 ثخن أصبعين وحرفهما نحو أصبع وطولهما شبر ونصف وفى وسط
 الخشبتين رائدان من جنس الخشبة نفسها قد أوثقتا فيهما يكون
 طولهما نصف شبر أو أكثر قليلا وعرضهما نحو أصبعين أو أكثر قليلا
 10 وهذان الرائدان هما اللذان يدخلان فى فم الرحم³ ليفتح بهما عند
 إدارتك اللولين؛

صورة آلة أخرى لمثل ذلك أطف وأخف:

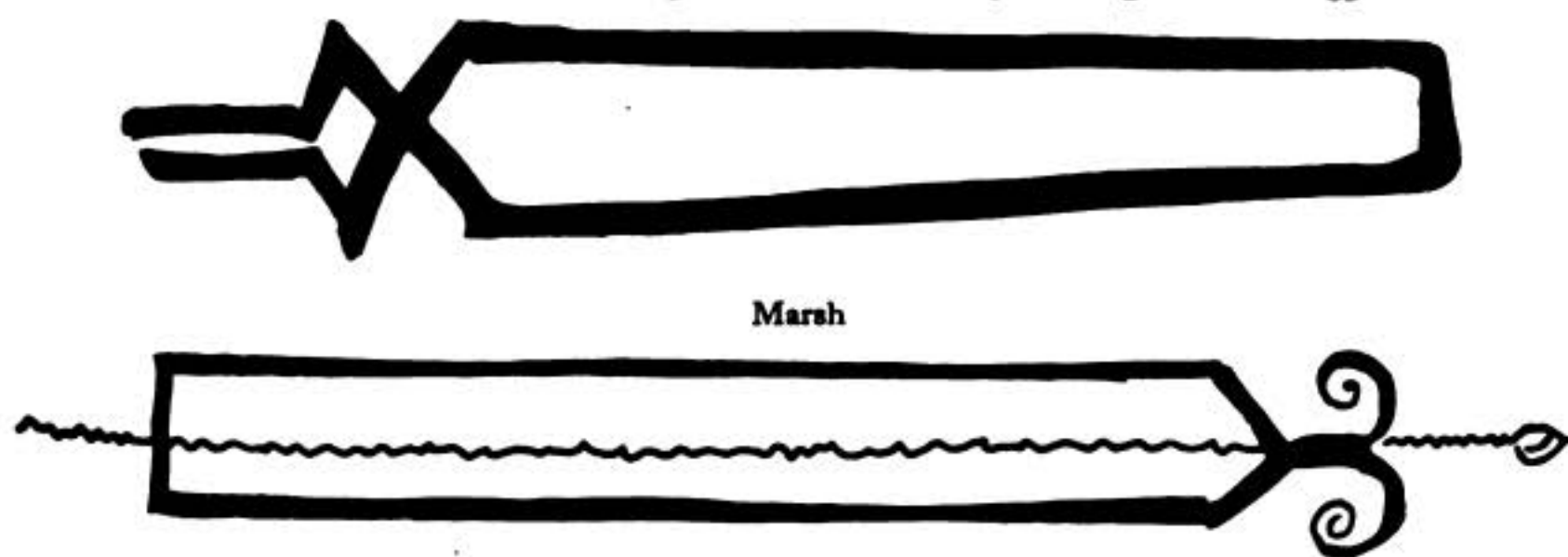


Fig. 141

Huntington

تصنع من خشب الآبنوس أو البقس على شكل الكلايب إلا أن
 لها فى طرفها رائدان كما ترى طول كل رائد منهما نحو شبر
 15 وعرضهما أصبعان فإذا أردت فتح الرحم بها فأجلس المرأة على سرير
 مدلاة رجليها منفرجة ما بين ساقيهما ثم أدخل هذين الرائدَيْنِ
 مضمومين فى فم الرحم وأنت ماسك طرف الآلة أسفل بين فخذيها ثم

2. V. الفرج. 3. cett. هذه صورة V.

then open your hand in the same way as you would do with forceps, to the extent to which you wish to open the womb, so as to allow the midwife to do what she desires. Another type of screw speculum mentioned by the Ancients (fig. 142).¹ Figure of the thruster for thrusting the foetus (fig. 143).

¹ The vertical portion of fig. 142 in M, intersecting the curve to the right of the handle and terminating below in a leaf shape, is labelled 'figure of a scalpel with two sides'. It does not represent part of the speculum. But see Commentary.

be the same as the semicircular attachment of blade to screw in the Marsh drawing. Then, following this up, the perforated plate (e) must be the movable blade of the speculum; it must, consequently, be supposed that the fixed blade (c in the Marsh MS.) is hidden behind the movable one, which is shown in perspective, not, as in the Marsh drawing, in an edgewise view. All this is conjectural; it seems certain that the Huntington illustration is the work either of a very inferior artist or, more likely, of a person who had never seen the instrument at all. There is cause to believe this to be true of a number of illustrations in the Huntington MS.

Comparing these two types of screw speculum with the classical type, one can find no trace in either of the Arab instruments of the clever device of the cross-piece sliding over the curved shanks, which is the special feature of the speculum introduced by Archigenes and Soranus.

The speculum shown as figure 141 as a smaller and lighter model, is actually entirely different in principle. It was made of wood; and the long bow-shaped handle end provided the spring. The blades are crossed so the pressure of the hand holding it would close the blades for introduction; then, when in position, as he says, you relax the hand and the spring would open the blades and permit inspection. The Marsh figure shows this well; while the Huntington one is probably a fanciful sketch by a scribe who had never seen the instrument. This type does not seem to have been mentioned by the Ancients; but it is of such a simple primitive design that its origin, like that of the tube speculum mentioned in the Jewish Talmud, but not in any Arabic work, may be lost in antiquity. It is,

however, worthy of note that Albucasis speaks of it as shaped like forceps; this really agrees better with the type of anal speculum known from the pseudo-Hippocratic *Περὶ αἱμορροῖδων* (5) as the *κατοπτήρ* and discovered at Pompeii (see Milne, plate 46) than with the illustrations discussed above.

Thruster. This, the next instrument in the obstetrician's equipment, is the *مدفع*—*midfa'* (fig. 143). From the shortness of the single sentence accompanying the drawing in both MSS. one would expect to find a full description and account of its use in the two previous chapters; but both are entirely omitted and there is no word on the use of this thruster anywhere else in the work; nor is there an account of any such instrument in any of the Greek or Roman authors. This perhaps explains why Albucasis gives no proper name to it but simply calls it a thrusting instrument. In modern Arabic the word is used for 'cannon'. It may perhaps be guessed that the acute-angled limbs were designed to get a grip on the neck of the foetus and thus push out the rest of the body. Its closest relationship seems to be with the old-fashioned vectis; but this of course was introduced and then used to lever the body along; a manner of use hardly possible with an instrument such as that figured in both MSS. It may be remarked that the same word *midfa'* is used twice elsewhere: for the plunger of the special ear-syringe (Book II, chapter 6) and again, in chapter 94, for the arrow-extractor; in this case it seems intended, when the arrow-head is stuck deeply in the tissues, to push it on toward the opposite surface to be pulled out.

Cephalotribe. This seems the best interpretation of the Arabic *mishdākh*, the instru-

افتح يدك بالآلة كما تفعل بالكلايب سوا* على قدر ما تريد من فتح
الرحم حتى تصنع القابلة ما تريد*
صورة لولب آخر ذكره الأوائل: 20



Marsh



Huntington

Fig. 142

Figure of the cephalotribe for crushing the foetal head (fig. 144). It resembles scissors with toothed jaws, as you see. Sometimes it is made long like forceps, as you see in this illustration, with teeth like the teeth of a saw;

ment next shown (fig. 144). The word is derived from *shadakha*—to crush; so the literal meaning would be 'crusher'. Its use is described in chapter 76 and confirms this interpretation; showing that it was used to crush the head of the foetus when hopelessly impacted through either its own excessive size or the narrowness of the pelvic opening. The word is not elsewhere employed. Both illustrations are the same and show a pair of very strong forceps with handles affording a good grip; and great curved jaws with teeth. Although the text does not warrant such a conclusion, it is hard to avoid the impression that the curve of the jaws was intended as a kind of cephalic curve; and that, with the head well gripped, it was to be compressed to passable dimensions and then pulled through. There would be no thought, in the use of this instrument, of forceps delivery of a living child.

Under the same heading there is also shown a pair of forceps that approximates rather to the modern cranioclast. As the author says, 'you may either cut or crush with it', which is precisely the purpose of the modern straight-jawed toothed instruments. It is worth noticing that he describes the first pair (fig. 144) as resembling *mīqas* or scissors; whereas this second model (fig. 145), which we have termed cranioclast, he speaks of as resembling *kalālīb* or forceps. These two words have both been discussed in commentary on chapters 31 and 57.

Now although these instruments are regarded with disfavour by modern gynaecologists, there can be no question that if used as directed by Albucasis they must have been of value in terminating a labour that was prolonged to the point of endangering not only the child but also the mother. Until the time of the Chamberlen family, practitioners were generally opposed to interference and such confinements ended fatally. This was actually the outcome of the

case handed over to Hugh Chamberlen, as a test, when he went to demonstrate his skill in Paris. The miserable woman, a hopeless rachitic, died after Chamberlen failed and Mauriceau attempted caesarean section (Radcliffe, *The Secret Instrument*, 1947, p. 24). This incident shows that after the Arabs the knowledge of the use of forceps was lost until the Chamberlens' secret was out.

The pseudo-Hippocratic work on gynaecology (I. 70) mentions the use of the *πίεστρον* (from *πιέζω*—to crush) for breaking up the foetal head for removal with a bone-scoop (*ὀστέουλκος*). Dioscorides mentions a *πιεστήριον* and *πιεστήρ*, both clearly equivalents of the *πίεστρον*. The word is explained by Galen in his Lexicon as an *ἐμβρυοθλάστης* or foetus-crusher. These facts show that from early times the operation was known and that instruments had been specially devised for it. The date of the pseudo-Hippocratic treatise is uncertain but as Celsus refers to it its date must be before Christ. But these special instruments seem to have gone out of use later; for Paulus (VI. 74), discussing operative measures in difficult labour, suggests breaking up the foetal head with the ordinary bone-forceps (*ὀσάγρυπα*). The Arabs therefore may have found some ancient source; or they may have independently hit on the design.

Midwifery hook or crotchet. This is the ordinary word *منارة*—*ṣinnāra*—hook e.g. a fishing hook. There are notes on this instrument at chapter 46. But the obstetrical hook is worth notice on its own.

The first (fig. 147) seems to be a straight, strong, sharp-pointed hook essentially the same in both MSS.; which must be that which the midwife in chapter 76 is to fasten in various parts of the dead foetus in order to draw it out.

Figure 148 shows a double hook of the same design in both MSS. They curve in opposite directions from the single stout

صورة المدفع الذى يدفع به الجنين :

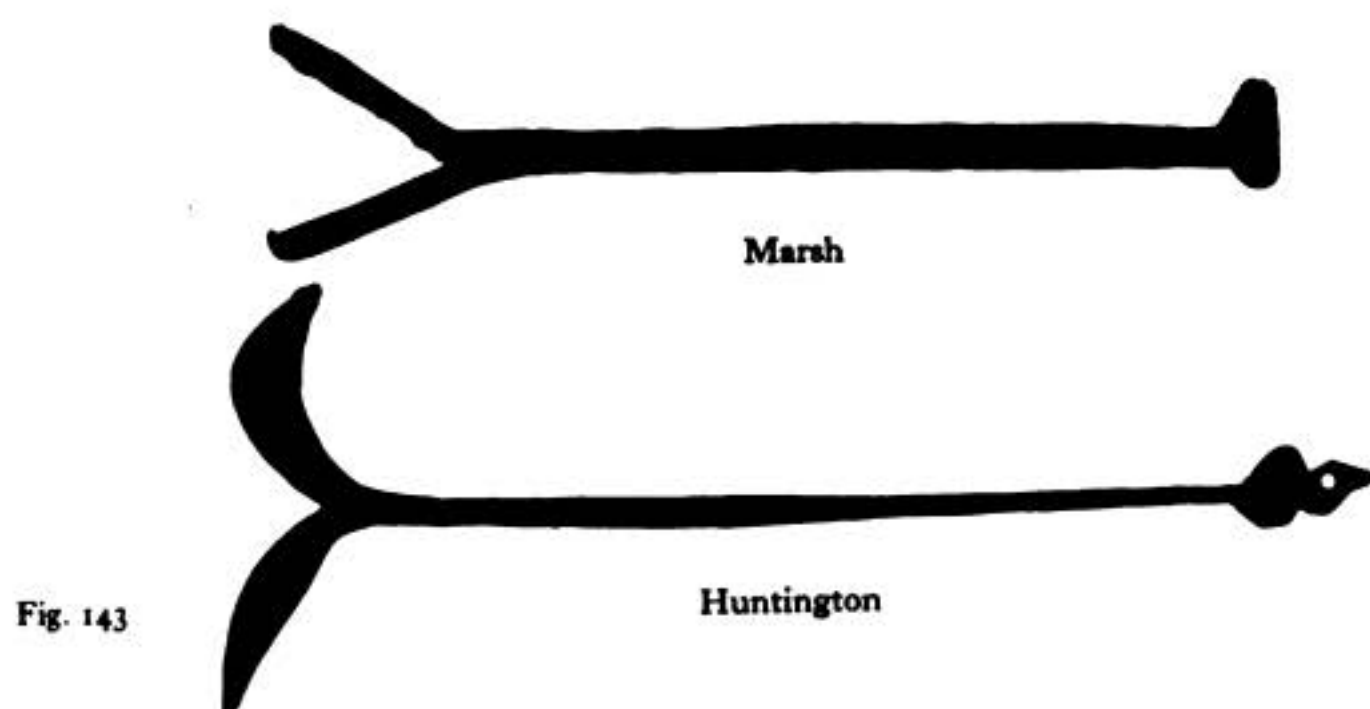


Fig. 143

صورة المشدخ الذى يشدخ به رأس الجنين :

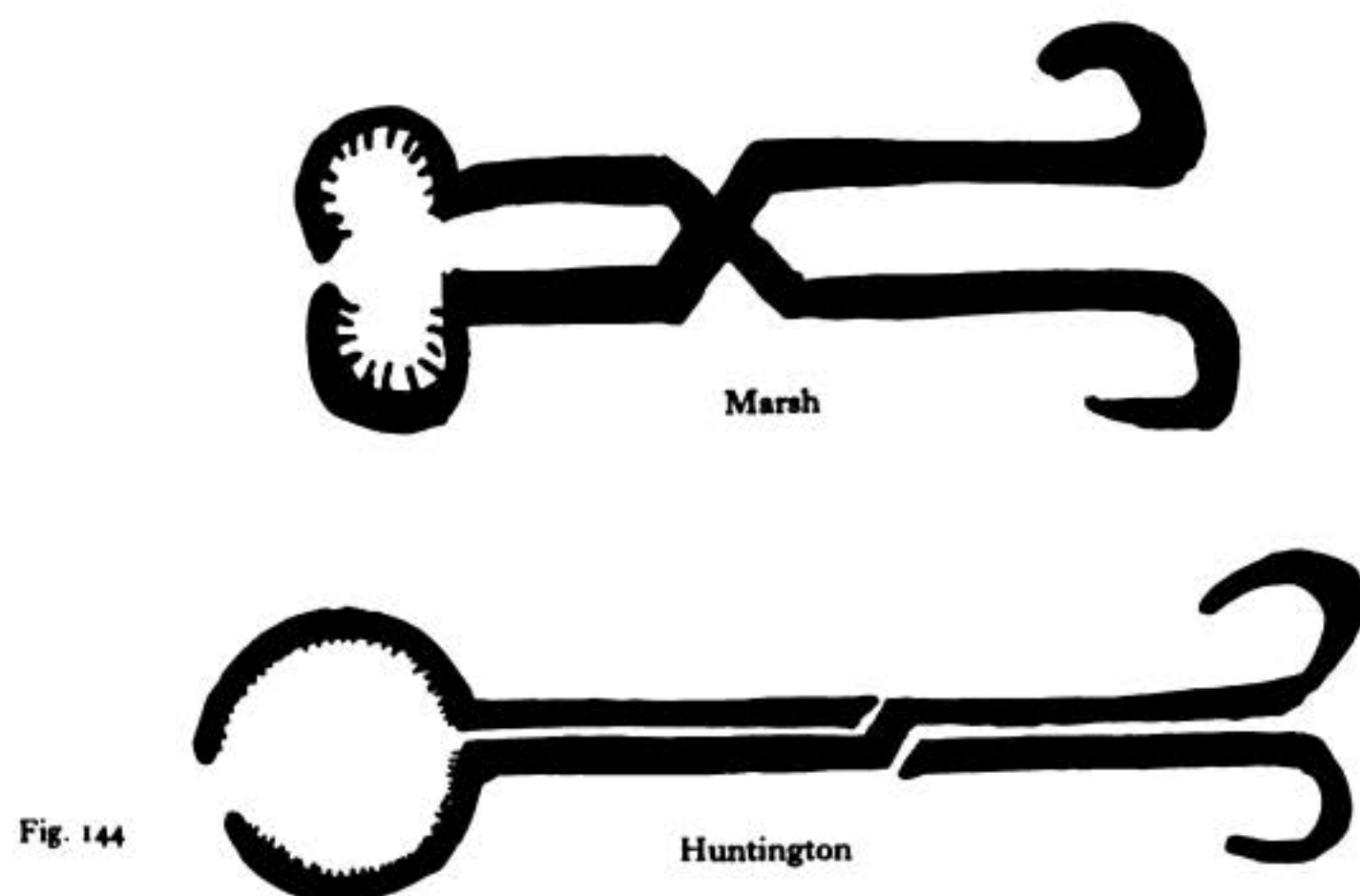


Fig. 144

يشبه المقص له أسنان فى الطرف كما ترى وقد يصنع مستطيلا
كالكلاليب على هذه الصورة كما ترى له أسنان كأسنان المنشار تقطع

and you may either cut or crush with it (fig. 145). Figure of another thruster (fig. 146). Figure of a hook (fig. 147). This is a hook which should be rather thick so as not to break when extracting the foetus. Figure of a double-

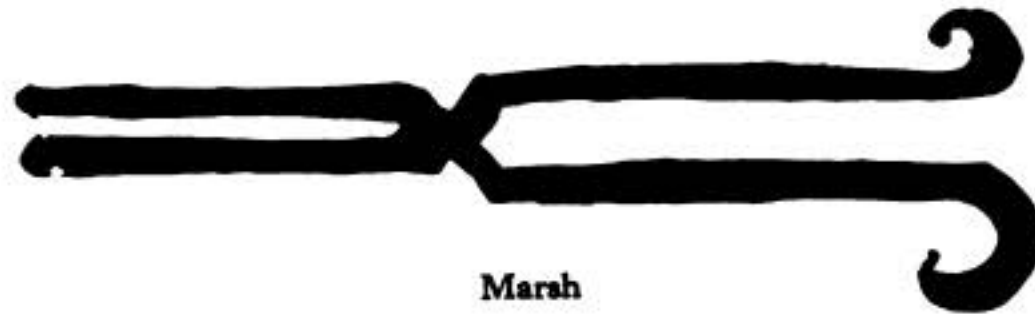
handle. It may have been used in the same way as the single type.

The crotchet was well known in classical practice. The pseudo-Hippocratic *Γυναικείων* mentions the *έλκυστήρ*. Celsus later (vii. 29, 4) speaks of the *uncus undique levis acuminis brevis* which seems to correspond with figure 147; and in the same passage he also mentions the *uncus* for decapitating the foetus if stuck in transverse. This must have been a hook with a sharpened inner edge and seems not to have been known to Albucasis as he does not give a decapitator proper. Paulus Aegineta whose chapter (vi. 74) on obstetrics has been largely drawn upon here gives only the *ἐμβρυολκός* for fixing into the dead body of the foetus; Paulus is thought to have got this instrument from Soranus the gynaecologist (iv. 9—Ilberg's edn.) via Aetius (xvi. 23—Ilberg's edn.).

Perforator. Albucasis uses the common word *mibda'*, i.e. knife, for this class of instrument and illustrates a wide assortment (figs. 149, 150). Why so many were needed we do not know. They all look like blades without handles and so were probably de-

signed to be held concealed between the midwife's fingers while she passed her hand up the passage: '. . . she should introduce between her fingers a spike-shaped scapel. . . .' The many different patterns may have been intended also to make an impression on the patient and family. But while the term 'perforator' seems not inappropriate, without doubt these special scalpels were also used for the dismemberment of the dead foetus; called embryotomy by the Ancients. The Greek and Roman surgeons also had knives designed for opening the foetal head. The pseudo-Hippocratic work already mentioned speaks of the *σκολοπομαχαίριον* for this purpose. Celsus passes over it. Then Tertullian (the Christian apologist of the second century) in his oration, *de Anima*, speaks of the *ἐμβρυοσφάκτης* (*σφάζω*—to slay) which he describes as *aeneum spiculum* corresponding with the above. He goes on to say that Hippocrates, Asclepiades, and Erasistratus all had it. Paulus and his contemporaries speak of the *πολυπικόν σπαθίον*, the *κατιάς* (stilette), and the *σκολοπομαχαίριον* as above, all for, in general, the same purpose.

25 به وترض :



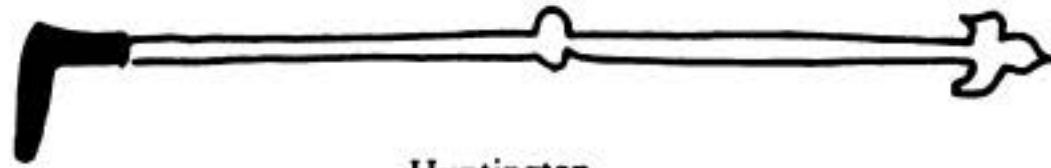
Marsh



Huntington

Fig. 145

صورة مدفع أيضا :



Huntington

Fig. 146

صورة صنارة :



Huntington

Fig. 147

هذه الصنارة يكون فيها غلظ قليلا لئلا تنكسر عند جذب الجنين

بها،

headed hook (fig. 148).¹ Figure of two broad scalpels for cutting up the foetus (fig. 149). Figure of a two-ended scalpel (fig. 150).²

The more types of these instruments the practitioner has ready by him, the more rapidly he operates, and the greater his reputation among men. So do not neglect to have ready by you a single one of these instruments, for you will certainly need it.

¹ The double-headed hook (fig. 148) in M is incorrectly labelled with a garbled version of the caption belonging to fig. 147.

² Figures resembling these appear at this point in other MSS. In ABP they are unlabelled, as in H. V here shows what looks like the front view of an aeroplane-propeller, labelled 'figure of a two-ended scalpel for cutting the foetus'. The figure in M is marked 'figure of a scalpel...' (five or six illegible letters follow).

صورة صّارة ذات الشوكين :

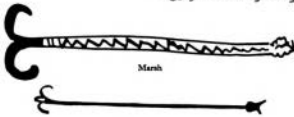


Fig. 148

Huntington

صورة مبضعين عريضين لقطع الجنين :

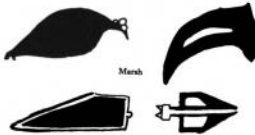


Fig. 149

Marsh

Huntington



Marsh

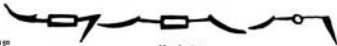


Fig. 150

Huntington

هذه الآلات كلها كلها كرت أنواعها وكانت معدة عند الصانع
كان أسرع لعمله وأرفع عند الناس لقدرة فلا تستحق منها آلة أن
تكون عندك معدة فلا بد من الحاجة إليها

CHAPTER SEVENTY-EIGHT. On extracting the afterbirth.

When in a confinement the afterbirth is left behind, you should bid the woman hold her breath then make her sneeze with ptarmica, with your hand holding her mouth and nose; and if it come away thus, good. But if not, then take a pot, pierce a hole in the lid, and put in it herbs that will open the womb, such as pennyroyal, rue, anise, chamomile, artemisia, cassia, and centaury, some or all of these remedies, submerge them in water, and place on the fire. Then fix a silver tube to the hole in the cover and bring the other end into the orifice of the womb and hold it in position so that the vapours may reach the body of the uterus. Then let her sneeze, as we said, and the afterbirth will quickly come away.

But if, after this treatment, it still remains and does not come out, then tell the midwife to dip her hand in oil of sesame or mucilage of marsh-mallow and introduce it into the vulva and search for the afterbirth, and when she has found it, to take hold of it and very gently draw it until she bring it out. But if it be adherent to the depths of the uterus, then let her pass her hand in as we described until she find the afterbirth; then let her draw very slowly and gently lest by violent pulling she cause a prolapse; and she should slowly move it from side to side, left and right; then let her increase the traction, for then it gives way to the pull and is freed from its adhesions. If the uterine opening be narrowed, we have earlier mentioned the treatment by induced sneezing and that of the pot and herbs. But if it does not come away by all the means we have described, beware of treating her roughly with repeated traction. Whatever of it comes out of the opening should be tied to the woman's thigh, and then syringe her with Tetrapharmacon ointment; for that will cause putrefaction in a few days and

الفصل الثامن والسبعون فى إخراج المشيمة

إذا احتسيت المشيمة بعد النفاس فينبغى أن تأمر العليقة أن
تمسك نفسها ثم تعطسها بالكندس وتشد يدك على فمها ومنخريها
فإن خرجت بهذا وإلا فخذ قدرا واثقب فى الغطاء ثقبه وضع فيها
5 الحشائش المفتحة لفم الرحم مثل الفودنج والسذاب والشبت والبابونج
والشيخ والسليخة والقنطاريون كل هذه الأدوية أو بعضها وغمرها
بالعاء واحملها على النار ثم تضع أنبوب فضة على ثقب غطاء القدر
والطرف الآخر فى فم الرحم وتمسكه حتى يصل البخار الى قعر الرحم
ثم تعطس كما قلنا فإن المشيمة تخرج بسرعة،
10 فإن بقيت بعد هذا العلاج ولم تخرج فأمر القابلة أن تغمس¹
يدها اليسرى فى دهن شيرج أو لعاب الخطمي ثم تدخلها فى القبل
وتفتش بها المشيمة فإذا أصابتها قبضت عليها ومدتها قليلا قليلا حتى
تخرجها، فإن كانت ملتصقة فى عمق الرحم فأدخل اليد على ما
وصفنا حتى إذا ما وجدت المشيمة فاجذبها قليلا قليلا على الإشفاق²
15 لكلا تسقط الرحم عند الجذب الشديد بل ينبغى أن تنقل برفق الى
الجوانب يمنة ويسرة ثم تزداد فى كمية الجذب فلإنها تجيب حينئذ
وتتخلص من الالتصاق، فإن كان فم الرحم منضما فقد وصفنا العلاج
بالتعطيس وعلاج القدر والحشائش، فإن لم تخرج بجميع ما وصفنا
فإياك والعنف عليها فى إعادة الجذب ولكن ينبغى أن تربط ما خرج
20 منها الى فم الرحم الى فخذ المرأة ثم احقنها بالمرهم الرباعى فإنه

1. BP, cett. تسخن. 2. HPS, B, الاستقامة, cett.

it will loosen and come out. However, when it necroses foul odours arise from it that ascend to the stomach and head and these cause harm to the patient; so she should have suffumigations appropriate for this. One of the Ancients tried suffumigation with nasturtium and dried figs.

The form of instrument for suffumigating a woman for retention of the menses and of the afterbirth and the like (fig. 151).

It is made of lead,⁵ resembling a funnel, or it may be made of bronze. Its narrow extremity is introduced into the pudenda and the wide end is put over the fire, and the suffumigation is produced on the hot coals. Keep it there until all the fumes are gone, and repeat once.

⁵ The majority of the MSS. read 'glass'.

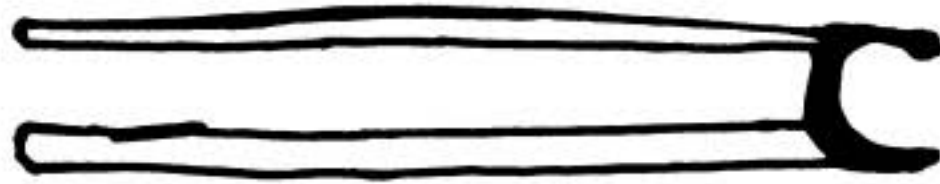
BOOK TWO. CHAPTER SEVENTY-EIGHT

On the extraction of the placenta Albucasis follows the Ancients again, Celsus (vii. 29, 9), Aetius (xvi. 24), Soranus, and Paulus. He shows (fig. 151) an example of the instrument used for the fumigation which was generally the favourite classical method of

encouraging the detachment of the placenta. The Marsh drawing is very crude but that in the Huntington MS. shows a neat tapering funnel. The word used, *al-qam'*, funnel, is the same as that for the instrument for irrigating the bladder (chapter 59).

يعفنها بعد أيام وتنحل وتخرج إلا أنها اذا تعفنت فإنها تترقى
منها رائحة رديئة الى المعدة والرأس ويؤذى ذلك العليلة فينبغى أن
تستعمل الدخن الموافقة لذلك وقد جرب بعض الأوائل دخنة الحُرف
والتين³ اليا بس ،

25 صورة الآلة التى تبخر بها المرأة عند احتباس الطمث والمشيمة
ونحو ذلك :



Marsh



Fig. 151

Huntington

تصنع من رصاص⁴ تشبه القمع او تصنع من نحاس يوضع الطرف
الرقيق فى القبل والطرف الواسع على النار والبخور مجعول على الجمر
تمسكه حتى يذهب ذلك البخور وتعيد غيره ،

3. والنبق A. 4. HM, زجاج cett.

CHAPTER SEVENTY-NINE. On imperforate anus.

Infants are quite often born with the anus imperforate, closed by a fine membrane; then the midwife should perforate the membrane with her finger or pierce it with a sharp scalpel, being careful not to touch the muscle. Then wool dipped in oil and wine should be applied, and treat it with ointments until healed. If you are afraid it may close up, put into the opening a leaden tube for many days, which will be removed when the child wants to evacuate the bowel. Sometimes also the anus is closed by the scarring of a wound or an abscess; then the scarring should be incised, and then dressed by those methods we have mentioned, including the leaden tube.

BOOK TWO. CHAPTER SEVENTY-NINE

This chapter on imperforate anus is a transcription of Paulus (vi. 81).

الفصل التاسع والسبعون فى علاج المقعدة غير المثقوبة

قد يولد كثير من الصبيان ومقاعدهم غير مثقوبة قد سدّها صفاق رقيق فينبغى للقابلة أن تثقب ذلك الصفاق بأصبعها ولا فلتبطّه بمبضع حادّ وتحذر العضلة لا تمسّها ثمّ تضع عليه صوفة مغموسة فى الشراب والزيت ثمّ تعالجه بالمراهم حتى يبرأ، فإن خشيت أن ينسدّ فضع فى الثقب أنبوبة رصاص آيما كثيرة وتتنزع متى أراد الطفل البراز، وقد يعرض سدّ المقعدة أيضا من اندمال جرح او ورم فينبغى أن يشقّ ذلك الاندمال ثمّ يعالج بما ذكرنا من العلاج والرصاص،

CHAPTER EIGHTY. On the treatment of fistulae occurring in the lower parts.

Fistulae in the lower parts are a knotting and thickening of the tissues occurring externally near the anus or in the perineum to one side. A fistula may be single or multiple. When a thickening of this kind has become chronic it opens and there flows out a white watery humidity or thin pus. These fistulae may be perforating into the rectum or bowel, or non-perforating. The former may be known by faeces or flatus coming out of them when the patient opens the bowel. Often also worms come out of them. Sometimes also there are fistulae occurring in the perineum which penetrate to the urinary bladder and to the urethra; and some also penetrate to the hip-joint and to the coccyx. A fistula penetrating to the anus may also be distinguished from one not so penetrating by introducing the finger into the anus and a fine probe into the fistula, made of either bronze or iron, if there be no bend in the course of the fistula. But if the course of the fistula be tortuous, then introduce a thin leaden probe or a horse-hair, until you feel the probe or horse-hair come on to your finger. But if you do not feel it at all and if no faeces nor flatus nor worm come out of the opening, as we said, you may know it is not perforating; so hurry on with treatment. When the fistula penetrates to the bladder or the urinary passages it is signified by the passage of urine and by the fact that medical remedies cannot cure it. But if it penetrate to the hip-joint or coccyx, this will be signified by the probe's passing right through to there if it be a straight passage to the bone; and by the pain felt in that part; and by the chronic purulent discharge; and the fact that medical treatment does no

BOOK TWO. CHAPTER EIGHTY

Anal fistulae. Meges of Sidon (first century A.D.) has an extant piece on this subject and proposed a method of treatment that was copied successively by Celsus (VII. 4, 4), Antyllus (in Oribasius XLIV. 22 and 23), Paulus (VI. 78). This was to pass into the fistula a probe with an eye at the point, termed *μηλωτρὶς*; the eye being already threaded with two or three linen threads whose ends should be drawn out at the other end of the fistula, and then the two sets of ends tied together. The author of the pseudo-Hippocratic *Περὶ συρίγγων* recommends horse-hair and linen thread (*ὠμο-*

λιμος). This method is still successfully practised. Albucasis accepts this treatment and gives a drawing of the eyed probe (*misbār*) for carrying it out (fig. 152). The importance of exploring the sinus thoroughly with various kinds of probe is stressed; and Albucasis mentions the straight bronze or iron probe and also the pliable leaden one for the sinuous fistula; this latter is the *μήλη κασσιτερίνη*, of Antyllus. See also comment to chapter 46.

The idea of laying the fistula open with the knife seems to have originated with Celsus (VII. 4): . . . *demisso specillo duabus lineis*

الفصل الثمانون فى علاج النواصير التى تحدث فى الأسفل

النواصير التى تحدث فى الأسفل هو تعقّد وغلظ يحدث بقرب
المقعدة من خارج او فى الفضاء من أحد الجهات ويكون الناصور
واحدا او أكثر، فإذا أزم ذلك التعقّد انفتح وجرى منه رطوبة
5 مائية بيضا او قيح رقيق وقد تكون من هذه النواصير منفوذة الى
المبعر وإلى المعاء وتكون غير منفوذة فالمنفوذة قد تعرف بما يخرج
منها من البراز والريح عند استعمال العليل التبرز وربما خرج منها
الدود ، وقد تكون منها نواصير اذا كانت فى الفضاء منفوذة الى
المثانة وإلى مجرى القضيب وقد تكون منها منفوذة الى مفصل الفخذ
10 وإلى عجز الذنب، وما يعرف به الناصور المنفوذ الى المقعدة أيضا
من غير المنفوذ أن تدخل أصبعك السبابة فى المقعدة وتدخل مسبارا
رقيقا فى الناصور من نحاس او حديد اذا لم يكن فى الناصور تعريج
فإن كان فيه تعريج فأدخل فيه مسبارا من رصاص رقيقا او شعرة من
شعرات الخيل حتى تحس بالمسبار او بالشعرة فى أصبعك، فإن لم
15 تحس به البتة ولم يبرز من الثقب شئ من البراز ولا ريح ولا دود كما
قلنا فاعلم أنه غير منفوذ فبادر الى العلاج ، وإذا كان الناصور منفوذا
الى المثانة او الى مجرى البول فدليه خرج البول منه وامتناعه من
أن يلتحم الموضع بالأدوية، وآما إن كان منفوذا الى مفصل الفخذ
او الى² عجز الذنب² فعلامته وصول المسبار الى هناك إن لم يكن فيه
20 تعريج الى العظم ووجود الوجع فى نحو الجهة وخروج القيح

cett. عظم الفخذ، B، عجب الذنب. 2. HM. عجم، A، عجب. 1.

good and ointment does not heal it. There is in these perforating sinuses no cure whatever; and their treatment is labour in vain for all the ignorant doctors who pretend that they understand them. But there is hope in operative treatment for those that are not perforating and chronic, as I know from experience and shall now describe.

Thus: have the patient lying on his back before you and let both his legs be raised with the thighs flexed back upon his belly; then introduce a probe of bronze, or of lead if the course be tortuous, until you determine where the probe reaches. Then, if the patient feel the probe somewhere in the region of the anus, put your forefinger into the anus. If you feel the probe itself with your finger, coming through bare, and you do not feel anything interposing between your finger and the probe, either membrane or flesh, then you may know for certain that it is a perforating fistula; do not spend your energy over it, for, as we have said, there is no cure. Yet some have said that it may be cured in certain cases, but rarely. The treatment from which some relief may be hoped is to heat a fine cautery corresponding to the width of the fistula, as we have said before, and pass this, hot, through the fistula to the anus; then repeat this two or three times until you know that all those compact tags of superfluous flesh, which resemble quills, are burnt away. Then dress with a pad soaked in oil until the burnt tissue comes away. Then treat with healing ointments and, if it heals, well and good. If not, it will never heal with any other treatment.

If you introduce the probe and it does not come through to your finger in the anus, and there be between your finger and the probe something firm interposing, either tissue or lining, and you see the fistula to be close

incidenda cutis est . . . but he gives no exact description of the scalpel required. Paulus says it should be done with a *σπαθίον* or a *ῥημοσπάθιον*, thus suggesting it to be a double-edged pointed knife. Cassius Felix (20) gives such a knife the special name of 'syringotomus'; while Galen recommends the *συριγγοτόμιον*, not for a sinus but for opening up an abdominal wound (see Comment to chapter 85); so that this syringotome must have been fairly early in use (see also chapter 46). Albucasis admits this more drastic treatment also, reserving it rather for those sinuses that lie close beneath the skin. The knife he illustrates (fig. 153) he describes as being very sharp on one side and blunt on

the other. The example shown in the Huntington MS. answers very well to this description and would undoubtedly serve well for cutting down upon the probe introduced along the fistula according to the instructions. The Marsh figure, however, is most curious; the blade is very stout and broad and wedge-shaped; it seems more suitable for insertion into the fistula to cut outward, so laying it open from within. It is unlike any other knife shown in this work with the exception of the Meges type of lithotomy knife (chapter 60, fig. 136). As Meges was closely associated with the classical treatment of both stone and fistula it is possible that Albucasis, or an author used by him, got

منه دائما وأن لا ينجع فيه علاج ولا يلتحم بمرهم وهذه النواصير
المنفوزة كلها فليس منها برء البتة وعلاجها عنا³ باطل لمن يتسور⁴
عليها من جهال الأطباء، وأما التي غير منفوزة وغير مزمنة فيرجى
لها البرء بالحديد على ما أنا واصفها وما قد جرّته،

25 وهو أن تضجع العليل بين يديك على ظهره ويشيل ساقيه الى
فوق وفخذاه مائلة الى بطنه ثم تدخل مسبار النحاس او الرصاص إن
كان فى الناصور تعريج حتى تعلم حيث ينتهى المسبار فإن أحس به
العليل نحو المقعدة فينبغى أن تدخل أصبعك السبابة فى المقعدة
فإن أحسست فى أصبعك المسبار قد نفذ بنفسه مكشوفاً من غير
30 أن تحس بين أصبعك وبينه بصفاق او بلحم فحينئذ فاعلم يقينا أنه
منفوز فلا تتعب فيه فليس منه برء كما قلنا، وقد قالوا إنه يبرأ فى
بعض الناس فى الندرة ومن العلاج الذى يرجى له النفع أن تحق
مكواة رقيقة على حسب سعة الناصور كما تقدم وتدخلها حامية فى
الناصر حتى تبلغ نحو المقعدة ثم تعيدها مرتين او ثلاثا حتى تعلم
35 أنه قد احترق جميع تلك اللحوم الزائدة المتلبدة التى تشبه أنبوبة
ريش الطير ثم تعالجه بقتل مبلولة⁵ فى السمن حتى تخرج تلك اللحوم
التي احترقت ثم تعالجه بالمراهم الملحمة فإن برئ وإلا فليس يبرأ
بغيره من العلاج أبداً،

وأما إن أدخلت المسبار فلم ينفذ الى أصبعك التى فى المقعدة
40 وكان بينها وبين المسبار حجاب كثيف من لحم او من صفاق ورأيت

cett. ملثويه، M ملوثة، B. 4. cett. تصور، P سور 3.

under the skin, then cut open the skin at the origin of the fistula and continue your incision, with the probe in the fistula, until you come to the place where the tip of the probe has reached and the probe is freed and falls out. Then clean out all the solid quill-like pieces of tissue and let none remain. Then treat with healing salve until healed.

If the haemorrhage be too much for you and interferes with your operating when cutting away the tissues, then the best and most speedily efficacious thing you can do is to cauterize, either with fire or with caustics. For cauterizing with fire unites two good characteristics, the burning away of those superfluous tissues, and the stanching of the bleeding, as well as the drying-up of humidity. Then treat with a dressing soaked in butter, or sulphur pounded with oil, until the place putrefies and the burnt tissue comes away in the pus. Then treat the wound with salves to encourage healing and the growth of firm flesh, these remedies having also a styptic and drying quality. Then when the wound is healed over it is cured for good and there is no fear of a recurrence.

If the fistula reaches deep into the anus and is far from the surface of the body, then put your finger into the anus and palpate. If you feel a barrier of flesh or membrane interposed between the probe and your finger, and it be nearly through, then there is nothing to be done except to try a remote hope. There are three methods that you may employ. The first is to cauterize it, as we have said. Or you may cut it open until you reach the termination so as to be able to insert a dressing and bring the medicament into contact with it, but do not extend your incision too far lest you cut into the sphincter muscle and the patient become incontinent of faeces; then dress in the manner we have said and perhaps it may heal. Or you may perforate the barrier and pierce it through, after incising to the vicinity

mixed up over the pattern of knife. The usual word *mibda'* is used.

The cautery is mentioned with the greatest

approval of all; probably the plain bolt-shaped cautery.

الناصر فيما يلى سطح الجلد فنشئ حينئذ الجلد من أول الناصور وأنت تمر بالثق مع المسبار وهو فى الناصور حتى تبلغ بالثق حيث انتهى طرف المسبار ويتخلص المسبار ويسقطه ثم تنقى تلك اللحوم المتلبدة التى تشبه أنبوب ريش الطير ولا تبقى منه شيئا ثم تعالجه

45 بالمراهم الملحمة حتى يبرأ،

فإن غلبك الدم وحال بينك وبين عملك لقطعك تلك اللحوم فأفضل ما تصنع وأسرع منفعة كيها بالنار او بدواء حار لأن الكلى بالنار يجمع حالتين حسنتين حرق تلك اللحوم الزائدة وقطع الدم وتشفى الرطوبات ثم تعالجه بالقتل المبولة فى السمن او الكبريت المسحوق بالزيت حتى يفتح الموضع وتخرج تلك اللحوم المحترقة ففى القحح، ثم عالج حينئذ الجرح بالمراهم الملحمة المنبئة للحم الصلب وهى الأدوية التى فيها قبض وتشف فأياه اذا انجبر فقد برئ ولا تحشى العودة،

فإن كان الناصور قد انتهى الى عرق القدمة وبعد عن سطح البدن فادخل أصبعك فى القدمة وفش بها فإن أحسست بالمسبار وبينك وبينه حجاب من صفاق او لحم وكان قريبا من النفوذ فليس العمل فيه إلا على طريق الطمع والرجاء وذلك أن تستعمل فيه أحد ثلاثة أرجه إما أن تكويه كما قلنا وإما أن تشقه حتى تبلغ قممره لتستمكن بإدخال الفتل والملاص من قرب ولا تتعادى بالثق لكلا 60 تقطع المضلة المحيطة بالقدمة فتحدث على العليل خروج البراز من غير إرادة ثم تعالجه بما ذكرنا فربما برئ كما قلنا وإما أن تنفذ ذلك الحجاب وتتقبه بعد أن تشقه الى قرب القدمة كما قلنا إما بالمسبار

of the anus, as we have said, either with the probe or with some other sharp-pointed instrument; then clear away the fleshy granulations in the incision as far as you are able; then attempt the repair of the whole wound with the incision and the upper opening, until it heals. Let the inner end of the fistula remain open, for this will ease the patient.

Sometimes also a fistula is cut out in this way: namely, you pass a probe into the fistula; it should be near the circle of the junction of the outer skin with the anal mucosa;¹ then take a probe with an eyed point like a shoemaker's needle (fig. 152); put into it a thread twisted of about five threads, and insert into the fistula until it reaches the end. If it has perforated through at the anal margin within, nearby, draw the thread out of that perforation by introducing your finger into the anus. Draw out the end of the thread and tie the two ends together and leave for one or two days. As the thread cuts into the tissues, tighten it up well until those tissues enclosed in the thread are cut through and fall away. Then dress the wound until it be healed and sound. If the mouth of the fistula is not perforated, perforate it as best you can, unless the depth is too great; in

¹ This seems to be the sense. Lit. 'It is when you pass the probe into the fistula and it is in one side of the anus toward the surface of the body, with the skin and the circle of the anus'.

وَأَمَّا بَالَةٌ أُخْرَى حَادَّةُ الطَّرَفِ ثُمَّ تَنْقَى تِلْكَ اللَّحُومُ الْمُتَلَبِّدَةُ الَّتِي فِي الشَّقِّ كُلِّهَا إِلَى حَيْثُ اسْتَطَعْتَ بِاسْتِقْصَاءٍ ثُمَّ رَمِ جَبْرَ الْجَرْحِ كُلَّهُ مَعَ الشَّقِّ وَالْفَمِ الْأَعْلَى حَتَّى يَنْخْتَمِ وَتَبْقَى النَّاصُورُ مَفْتُوحًا فِي دَاخِلِ الْمَقْعَدَةِ فَيَكُونُ أَخْفَ عَلَى الْعَلِيلِ،

وَقَدْ يَخْرُمُ النَّاصُورُ عَلَى هَذِهِ الصِّفَةِ وَهُوَ إِذَا أُدْخِلْتَ الْمَسْبَارُ فِي النَّاصُورِ وَكَانَ فِي جَانِبٍ مِنَ الْمَقْعَدَةِ نَحْوَ سَطْحِ الْبَدَنِ مَعَ الْجِلْدِ وَطُوقِ الْمَقْعَدَةِ فَخِذٌ حِينَئِذٍ مَسْبَارًا مَثْقُوبَ الطَّرَفِ كَأَكْبَرَةِ الْإِسْكَافِ عَلَى هَذِهِ الصُّورَةِ:

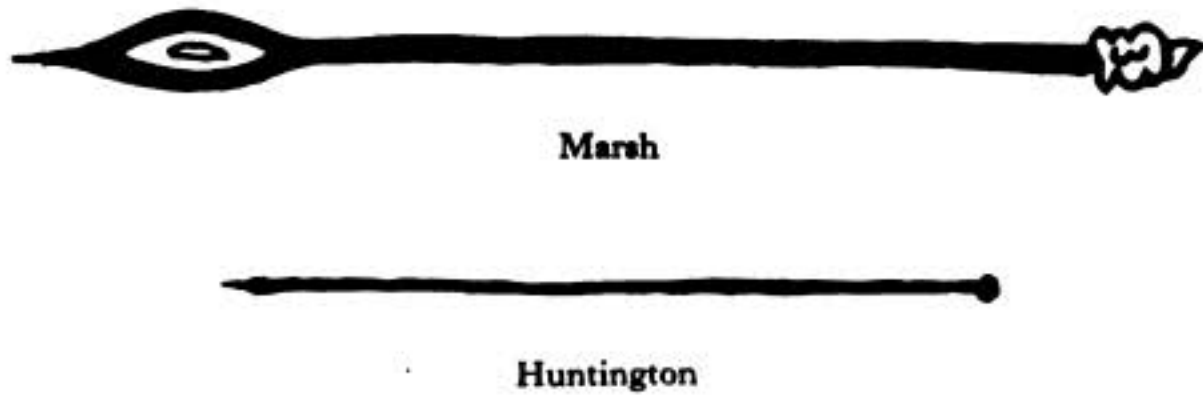


Fig. 152

وَأَدْخِلْ فِيهَا خَيْطًا مَفْتُولًا مِنْ خَمْسَةِ خَيْوطٍ أَوْ نَحْوِهَا ثُمَّ أَدْخِلِ الْمَسْبَارَ بِالْخَيْطِ فِي النَّاصُورِ حَتَّى يَبْلُغَ قَعْرَهُ، فَإِنْ كَانَ مَنفُوزًا فِي حَاشِيَةِ الْمَقْعَدَةِ مِنْ دَاخِلٍ بِالْقَرْبِ فَأَخْرِجِ الْخَيْطَ مِنْ ذَلِكَ الثَّقْبِ بَأَن تَدْخُلَ أَصْبَعُكَ فِي الْمَقْعَدَةِ وَأَخْرِجِ طَرَفَ الْخَيْطِ وَاجْمَعْ الطَّرَفَيْنِ جَمِيعًا وَشَدَّهُمَا وَاتْرَكْهُ يَوْمًا أَوْ يَوْمَيْنِ، فَكَلِّمَا قَطَعَ الْخَيْطَ فِي اللَّحْمِ شِدْدَتَهُ شَدًّا جَيِّدًا حَتَّى تَنْقَطِعَ تِلْكَ اللَّحُومُ الَّتِي بَيْنَ طَرَفَيْ الْخَيْطِ وَتَسْقُطَ، ثُمَّ تَعَالَجِ الْجَرْحَ حَتَّى يَنْدَمِلَ وَيَبْرَأَ، "فَإِنْ لَمْ يَكُنْ فَمِ النَّاصُورُ مَنفُوزًا فَاَنْفِذْهُ كَيْفَ مَا يُمْكِنُ لَكَ إِلَّا أَنْ يَكُونَ فِي الْعَمَقِ كَثِيرًا فَلَيْسَ لَكَ أَنْ

which case you must not do so lest you cut the muscle. Then treat as we have said until it heals.

Figure (fig. 153) of the sharp-pointed scalpel for cutting open fistulae; the curved edge should be exceedingly sharp and the other blunt, lest you cut what should not be cut, as you see.

تفعل ذلك من أجل العضلة لئلا تقطعها ، ثم اصنع به كما ذكرنا
 ٨٥ حتى يبرأ

صورة الموضع الشوكية التي تشق بها النواصير يكون التعقيف منه
 حادًا جدًا والجهة الأخرى غير حادة لئلا تقطع بها ما لا يحتاج
 اليه كما ترى :



Fig. 153

CHAPTER EIGHTY-ONE. On cutting and incising piles that are bleeding, and the treatment of fissures.

Haemorrhoids are of two kinds: either internal, resembling red bubbles or grape-seeds, small or large, with blood perpetually flowing, and they may be single or multiple; or they may be external, round about the anus. External ones are for the most part fairly dry; a little yellowish fluid or blood constantly oozes from them, and they are of the colour of the body.

The treatment of internal piles: bid the patient open his bowel and bear down until the anus opens out and the swellings are disclosed to you; then quickly take hold of them with hooks or with your finger-nail and cut them off near the roots. If the hook does not retain its hold on them because of their humidity and softness, then cut them with a piece of rough material or a rag of goat-hair, or draw them out with your fingers and cut them off; and after excision sprinkle some caustic powder on to act instead of the cautery; or cauterize them as previously described in the book on cauterization; then dress in the usual way until healed. But if the anus will not open out for you then give a slightly corrosive enema so as to wash out what is within, and then the anus will open out quickly when the patient bears down.

Now the treatment of external piles is easy and simple: take hold of them with your finger-nails or catch them up with a hook and cut them away; and treat as before mentioned until cured.

BOOK TWO. CHAPTER EIGHTY-ONE

This is an interesting chapter on piles; the treatment advocated is modern yet almost as old as medicine itself; for the pseudo-Hippocratic *Περὶ αἱμορροΐδων* and *de Ratione victus in acutis* (a later work, in Littré's

appendix, xxix) together give ligation and cauterization. Succeeding writers add little to this. Albucasis follows the general rules and this chapter is derived directly from Paulus (vi. 79 and 80).

الفصل الحادى والثمانون فى خرم البواسير التى يسيل منها الدم
وقطعها وعلاج الشقاق

تكون البواسير على ضربين إمّا أن تكون فى داخل المقعدة
تشبه نقّاحات حمر او كأنّها حبّ العنب وتكون منها صغار وكبار
5 والدم يسيل منها دائما وتكون واحدة وتكون كثيرة وتكون خارج
المقعدة وفى أطرافها إلّا أنّ هذه التى تكون من خارج المقعدة
تكون فى أكثر الأمر قليلة الرطوبة يسيل منها ما¹ أصفر او قليل دم²
سيلانا دائما³ وتكون على لون البدن،

وعلاج الذى يكون من داخل المقعدة أن تأمر العليل أن يتبرّز
10 ويتزحّر حتّى تخرج المقعدة وتظهر اليك الثآليل فتسرع فتعلقها
بالصناير او تمسكها بظفرك ثمّ تقطعها عند أصولها، فإنّ لم
تحتبس فيها الصناير لرطوبتها واسترخائها فحدّها بخرقه خشنة او
بقطعة من³ خبّة مرعّ³ او اجذبها بأصابعك ثمّ اقطعها ثمّ ذرّ عليها
بعد القطع بعض الذرورات الحادة لكى تقوم لها مقام الكى او
15 فاكوها على ما تقدّم فى باب الكى ثمّ عالجها بسائر العلاج حتّى
يبرأ، فإن لم تجبك المقعدة للخروج فاحقن العليل بحقنة فيها لذع
قليلًا لتغسل بها ما فى المقعدة وتنقاد للخروج بسرعة عند ما يتزحّر
العليل،

فأمّا الثآليل الخارجة عن المقعدة فأمرها هين سهل وهو أن
20 تأخذها بظفرك او تعلقها بصنارة وتقطعها ثمّ تعالجها بما ذكرنا

M. صوف. 3. AH. مزمنًا. 2. V. <مرّء>. 1.

But with the patient who refuses excision with the knife, this manner of removal should be practised: thread a twisted thread into a needle, then draw the piles upward and run the needle through the root of each, from one side to the other, and wind the ends of the thread round beneath the needle as it lies crosswise, and bind the pile firmly; then knot the thread and remove the needle. Do this with each pile, but leave one not destroyed so that the superfluous blood may flow from it. Then apply to the anus a piece of material soaked in oil of roses or wax; apply it and bid the patient lie quiet; then leave him until the piles fall away. When they fall away, dress with ointments and the usual dressings until healed.

The treatment of fissures: these often arise from dryness of the faeces and from constipation. If they become chronic, and medical treatment is unavailing, you should scrape them with the edge of a scalpel or with your finger-nail until they become soft and the upper layer, that prevents healing, is removed; then dress until they mend as they should. But if they do not heal, repeat the scraping more strongly than at first until they bleed freely and become raw; then apply dressings and they will heal.

حتى تبرأ ،

ومن كره القطع بالحديد فينبغي أن تستعمل خرمها على هذه
الصفة تأخذ خيطا مفتولا وتدخله في إبرة ثم تجذب الثولول الى فوق
وتنفذه بالإبرة في أصله من الجهة الأخرى وتلف طرفي الخيط أسفل
25 الإبرة وهي معترضة وتشد الثولول شدا وثيقا ثم تعقد الخيط وتخرج
الإبرة ، تفعل ذلك بجميع الثآليل وتترك منها واحدة لا تخرمها
لتسيل منها فضلة الدم ، ثم تضع على المقعدة خرقة مغموسة في دهن
ورد او قيروطي وتضعها على المقعدة وتأمر العليل بالسكون ثم تتركه
حتى تسقط فإذا سقطت الثآليل فعالجها بالمراهم وسائر العلاج
30 حتى تبرأ ،

وأما علاج الشقاق فكثيرا ما يعرض من جفوف الزيل واعتقال
الطبع فإذا أزم من ولم ينجع فيه دواء فينبغي أن تجرده بشفرة المبضع
او بظفرك حتى يصير رطبا ويزول عنه القشر الأعلى الذي يمنعه من
الالتحام ثم تعالجه حتى يندمل على ما ينبغي ، فإن لم يندمل
35 فعاوده بجرده أشد من الأول حتى يدمى نعتا ويسلخ ثم عالجه فإنه
يبرأ ،

CHAPTER EIGHTY-TWO. On the treatment of corns, inverted and otherwise, and dry warts and pimples.

A corn is a round knob, the same colour as the body and resembling the head of a nail. It occurs in all parts of the body but particularly in the soles of the feet and the toes, whence arises pain in walking. You should cut away what is round the corn and take it with forceps or a hook and tear it out by the root; then dress it. If you wish you may cauterize it in the manner already described in the book on cauterization. Then concerning dry warts: a wart is a little round rough compact eminence on the surface of the body; it occurs often on the hands of boys. Now the treatment is to draw out the wart and cut it off; or tie it off with a silken thread or a hair until it falls out; or if you wish, cauterize as said before, either with the actual cautery or with caustic. Sometimes warts¹, inverted or otherwise, are uprooted with the instrument I shall describe under the treatment of pimples.

A pimple is also a little compact thick prominence on the skin surface, going deep; when it gets cold there is a feeling as of an ant's sting in it. It is found all over the body but mostly on the hands. The treatment is to take the quill of a strong feather of the goose or the vulture, and place the quill over the pimple so as to encircle it with the circumference of the tube;

The title of the chapter and comparison with 1. 53 suggest that this is an error for 'corns'.

BOOK TWO. CHAPTER EIGHTY-TWO

For the removal of warts Albucasis here illustrates an instrument first brought forward by Paulus (vi. 87). The idea apparently was that the sharp circular edge of the tube (*anbūba*) bored away all round the wart and enabled it to be picked out whole. The

Marsh MS. shows such a tube with a roughened upper part to give the hands purchase in rotating it. The Huntington drawing shows a solid handle with a short tubular bore affixed at one end (fig. 154).

الفصل الثانى والثمانون فى علاج المسامير المعكوسة¹ وغير المعكوسة²
والتآليل اليابسة والنملة

إنّ المسمار إنّما هو عقدة مستديرة على لون البدن تشبه رأس
المسمار تكون فى جميع الجسد ولا سيّما فى أسافل القدمين والأصابع
5 ويعرض منها وجع عند المشى، فينبغى أن يشقّ ما حول المسمار
ويمسك بمنقاش أو بصنارة ويقلع من أصله ثمّ تعالجه وإن شئت كويته
على ما تقدّم فى بابه، وأمّا التآليل اليابسة فالواحدة منها هو نتو
صغير خشن متلبّد مستدير فوق سطح البدن وكثيرا ما يعرض فى
أيدى الصبيان وعلاجه أن تعدّ الثؤلؤل وتقطعه أو تخرمه بخيط حرير
10 أو بشعرة حتّى يسقط وإن شئت كويته على ما تقدّم بالنار أو بالدواء
الحادّ، وقد تقلع² التآليل المعكوسة³ وغير المعكوسة³ بالآلة التى أنا
ذاكرها فى علاج النملة،

أمّا النملة فهى أيضا نتو صغير متلبّد غليظ على سطح البدن
ذاهب فى العمق جدّا وإذا أصابها البرد أحسّ فيها شبيها بلذع
15 النمل ويكون فى الجسد كلّه وأكثره يكون فى الأيدى، وعلاجه أن تؤخذ
أنبوبة من ريشة إوزة أو ريشة نسر قويّة وتصير ذلك الأنبوب على النملة
حتّى تحيط دائرة الأنبوب من نواحيه ثمّ تدير يدك بالأنبوب حتّى

1. om. HM. 2. AV, يقطع cett. 3. om. M. 4. H. الاداء.

then revolve the quill with your hand so as to cut all round¹ the pimple, and go deep into the flesh, and then the pimple may be drawn out by the roots. If you wish you may extract it with a tube of bronze or of iron, of this form (fig. 154).

The upper closed part of the tube should be fine, solid, and twisted, to give easy purchase for the fingers in holding and revolving it. If you wish you may cauterize the pimple as described earlier on the cauterization of warts in the book on the cautery.

¹ M adds 'and underneath'.

تشق ما حول النملة^٥ وتصيره في عمق اللحم وتنقلع النملة من أصلها،
 وإن شئت فعلت ذلك بأنبوب نحاس أو حديد على هذه الصورة:



Marsh

Fig. 154



Huntington

20 يكون أعلى الأنبوب إلى الرقة مصمتا مفتولا ليسهل على الأصابع
 ضبطه وفتله، وإن شئت كويت النملة على ما تقدم في كوى الثآليل
 في باب الكوى،

CHAPTER EIGHTY-THREE. On the kinds of instrument for administering enemata in diseases of the rectum, and in diarrhoea and colic.

A clyster may be made of silver or of Chinese alloy or of cast or hammered bronze. Large and small varieties of this instrument are made, to suit those on whom they are to be used; those for the treatment of children will be small. Patients with stricture of the anus, or pain, will have very slender clysters. Figure of a large clyster (fig. 155). The upper end of the funnel to which the membrane is bound should be broad like this; it should have a rim where the membrane may be bound down, as you see. The lower extremity, which is introduced into the anus, should be closed and smooth, and on one side of it should be two holes, and on the other, one; the width of the holes should be about that of a probe or a little wider. The membrane to hold the medicament is made out of an

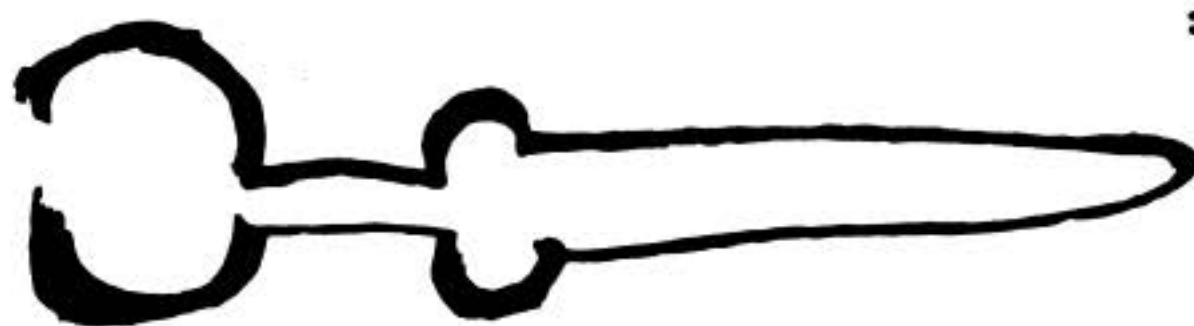
BOOK TWO. CHAPTER EIGHTY-THREE

Enema syringes, or clysters, are referred to by early authors, showing that they were employed from early times. The Hippocratic description of the *αυλίσκος* tied by the end to an animal's bladder corresponds precisely with the clyster illustrated in this chapter. The metal cannula or funnel part is first shown by itself (fig. 155). It is a tapering tube open at both ends, the larger end being expanded into a bulb and then a second bulb. The groove thus formed between the bulbs was to accept the ligature holding the bladder.

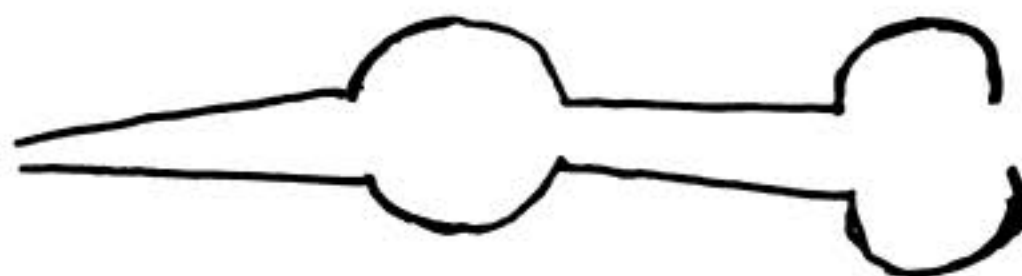
The complete instrument, with bladder tied in position, is shown in figure 157. The manner in which the bladder is pierced with holes for the ligature to run through is shown in a third drawing (fig. 156). Classical practice seems to have been to make one bulb only to retain the bladder in place (see Milne, plate 88. 2). To signify clyster Albu-casis used the word *mihqan* which is derived from the Arabic root 'to restrain' or 'to collect'. See also chapter 59.

الفصل الثالث والثمانون في صور الآلات التي تستعمل الحقن
بها في علل المقعدة والاسهال والقولنج¹

قد يصنع المحقن من فضة او من صيني او من نحاس مفروغ او
مضروب وقد تصنع من هذه الآلة صغار وكبار على حسب المستعملين
5 لها فتكون التي تستعمل في علاج الصبيان الصغار صغارا والذين
مقاعدهم ضيقة او متوجعة تكون محاقنهم لطافا جدًا، صورة محقن
كبير:



Marsh



Huntington

Fig. 155

قمعه الأعلى الذي يربط فيه الزق يكون واسعا على هذه الصفة
له حاجز حيث يربط الزق كما ترى وطرفه الأسفل الذي يدخل في
المقعدة يكون مصمتا أملس جدًا الى الرقة في أحد جانبيه ثقبان
10 وفي الجانب الآخر ثقب واحد تكون سعة الثقب على غلظ المرود او
أغلظ قليلا ويكون الزق الذي تجعل فيه الأدوية من مثانة حيوان او

P. والقولنج 1.

animal's bladder or of parchment, made up in the form of a small bag, a span in diameter. It should be pierced with a number of holes in a circle a finger's breadth apart; and into these holes pass a strong thread of yarn, twisted of ten or so threads, and with this gather up the skin like a bag; and when the medicament is placed in it tie it down firmly between the two rims on the upper end of the clyster; and then give the enema. This is the figure of the circle of skin with the holes (fig. 156).

Now the way to give an enema with this instrument is for the parchment or bladder to be filled with the medicament, which should be warmed so as to be tolerable for the patient; but beware lest it be too hot or too cold. Then let the patient lie back and raise his legs; and put under them a leather mat or a blanket. Then anoint the tip of the clyster with oil or egg-white or mucilage of fenugreek or the like; then gently pass it into the anus; then let an assistant take the membrane in both hands and together firmly squeeze it until all the contents are squirted into the bowel. Then

من رَقّ ضأن يصنع على هيئة السفرة الصغيرة يكون قطره² شبرا³ ويثقب
ثقبا كثيرة كما يدور ويكون بعد ما بين كل ثقب غلظ أصبع ، ثم
15 تدخل في تلك الثقب خيطا وثيقا من غزل ثنى من عشرة أخياط او
نحوها وتجمع به الزق كالسفرة فإذا وضع فيه الدواء شد في رأس
المحقن بين الحجرين شدا وثيقا ثم تحقق به ، وهذه صورة دائرة
الزق والثقب :

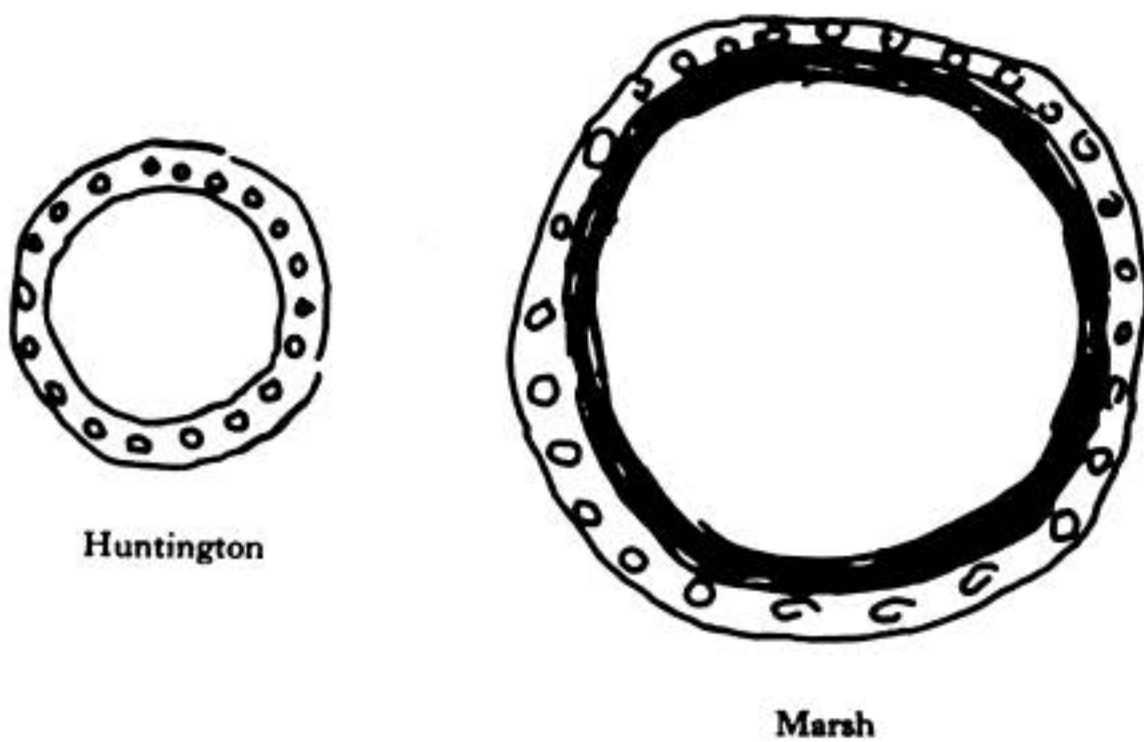


Fig. 156

وكيفية الاحتقان به أن تملأ الرق أو المثانة بالدواء وهو مدفا على
20 قدر احتمال العليل واحذر أن يكون حارّا جدّا او باردا جدّا ثم
يستلقى العليل على ظهره ويشيل ساقيه الى فوق ويوضع تحته نطع
او ملحفة ثم يدهن طرف المحقن بدهن او ببياض البيض او بلعاب
الحلبة او نحوها ثم تدخله في المقعدة برفق ثم يأخذ خادم الزق
بيديه معا ويعصره بشدة حتى يتفرغ جميع ما في المحقن في المعاء

2. V, قدره AB, cett. 3. M. <ونصف>.

the clyster should be removed and the patient should raise his legs against the wall. If the enema stimulates him to evacuate, let him hold it as long as he can; if he delay all night long, it will be all the more efficacious. If the enema be given in a case of diarrhoea and he has to evacuate hastily, then the use of the enema should be repeated until he is cured.

If there be haemorrhoids or painful tumours in the anus, the clyster should be exceedingly slender and smooth, of the sort employed for children. Here is a figure of a fine clyster with its skin tied on (fig. 157).

25 ثم يخرج المحقن ويشيل العليل ساقه الى الحائط ، فإن حفره
الدواء للخروج فليمتسك ما استطاع وإن نام به الليل كله كان أبلغ
في المنفعة ، فإن حقن به في علل الإسهال واستعجل خروجه
فلتعد الحقنة حتى يبرأ ،

فإن كان في المقعدة ⁽⁵⁾بواسير أو ⁽⁵⁾أورام مؤلمة فليكن المحقن لطيفا
30 جدا ألمس من المحاقن التي تحقن بها الصبيان ، وهذه صورة
محقن لطيف مشدود عليه جلده :

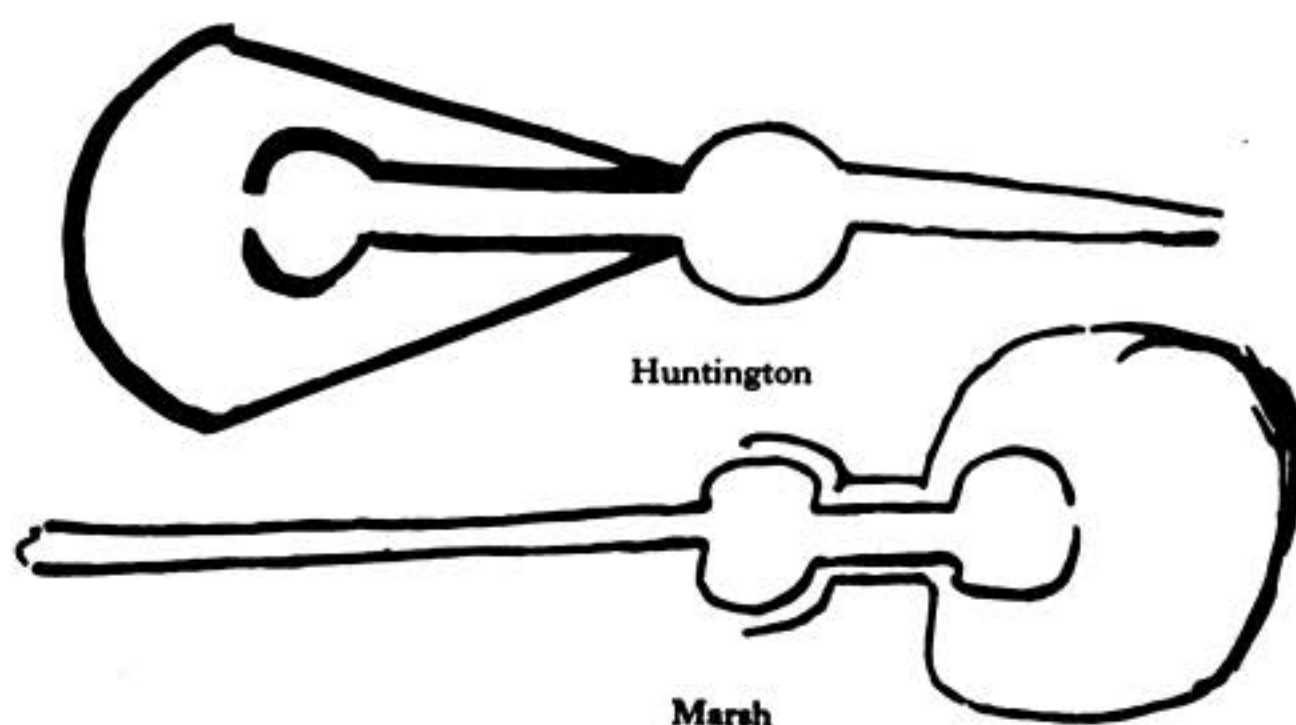


Fig. 157

4. M, دام تاخر. 5. om. AHP.

CHAPTER EIGHTY-FOUR. On the cure of wounds.

I have already mentioned in the appropriate section the treatment of such wounds as are suitable for cauterization. Here I shall describe the operative and medical treatment in full. So I begin by saying that wounds differ according to that which causes them and according to the site. Those things that cause wounds are many: a knock from a stone, a cut from a sword or a knife, a blow by a spear, stick, or arrow; and many such things. To consider wounds according to their site on the body, they are such as a wound occurring in the head, or neck, or chest, or belly, or liver, and so on.

Now I am going to describe the treatment of certain wounds, so that you may take them as a standard and a guide for other wounds. I shall begin particularly with the simple wounds of the head; for mention of the compound wounds will be made at the beginning of the third book. I say then, that when there occurs a simple wound of the head, with no accompanying bone-fracture, you should look; and if it be caused by a knock from a stone or the like, and has only broken the skin, but it is a big wound and you fear lest there occur an abscess, then bleed the cephalic vein at once without delay; draw off from him blood in proportion to his vigour if there is no contra-indication to venesection; and particularly if the haemorrhage from the wound be slight. The venesection should be on the opposite side to the wound; and caution the patient against gluttony and wine and rich food. But if from any cause venesection is prevented, he should be on a light diet and avoid meat and wines. And apply to the

BOOK TWO. CHAPTER EIGHTY-FOUR

This chapter on wounds does not altogether follow the usual sources, Paulus, Aetius, etc.

On wounds of the neck this chapter does seem to be the earliest reference to this specific kind of injury. It may have been the source of William of Saliceto's chapter on the subject (Book II, chapter 7). Sutures are only to be used if the vertebrae are exposed.

Wounds of the chest are, on the other hand,

given a good deal of attention in the pseudo-Hippocratic *Περὶ νοῦσων* (21). Then Celsus (v. 26, 9) draws attention to the symptoms of injury to the lungs. After that, no writer seems to have taken up the subject until Albucasis. His directions seem to be the fruit of his personal experience, and do not follow the lines of earlier writers quoted. There are here no notices of instruments.

الفصل الرابع والثمانون في علاج الجراحات

قد ذكرت في التقسيم من علاج ما شاكل الكيآت وأنا ذاكر
ها هنا علاجها باليد والأدوية على الكمال، فأقول إن الجراحات
تختلف بحسب الشيء الذي يكون به الجراحة وبحسب الموضع الذي
5 يقع عليه الجرح فالأشياء التي تكون بها الجراحات كثيرة كصّعة حجر
او قطع سيف او سكين او طعنة برمح او عود او سهم ونحو ذلك من
أشياء كثيرة، وأما الجراحات بحسب المواضع من الجسم فكالجرح الذي
يقع على الرأس او العنق او الصدر او البطن او الكبد ونحوها من
الأعضاء،

10 وأنا واصل علاج بعض الجراحات لتجعلها قياسا وقانونا على
سائر الجراحات وأنا أبتدئ بجراحات الرأس البسيطة خاصة لأن
المرجبة سيأتى ذكرها في أول الباب الثالث من هذا الكتاب، فأقول
إنه متى حدث في الرأس جرح بسيط ولم يكن كسر عظم نظرت فإن
كان من صّعة حجر او نحوه وكان قد شدخ الجلد فقط وكان الجرح
15 كبيرا وخشيت على العليل حدوث الورم الحارّ فبادر وافصده القيصال
على المقام ولا تؤخر ذلك وأخرج له من الدم على قدر قوته إن لم
يمنع من الفصد مانع ولا سيما إن كان الدم الذي يخرج من الجرح
يسيرا وليكن الفصد من ضدّ الجهة المجروحة وحذر العليل الامتلاء
والشراب والأطعمة الغليظة، فإن منع من فصده مانع فليقلل من
20 الطعام ولا يقرب اللحوم ولا الأشربة، وتحمل على الجرح إن حدث

1. M, <التي> cett.

wound, if there be any inflammation, cotton wool soaked in oil of roses, either alone or with a somewhat astringent wine. And if you are sure there is no inflammatory swelling, then apply directly to the wound, if its blood is fresh and it is unaltered by the air, the powder that I shall describe to you a little later. But if the air has already changed the wound, apply to it one of the ointments to cause it to discharge the pus; then dress until healed.

Now if it be a great wound, being caused by a sword-cut or the like, and dressings will not bring the edges of the wound together, you should suture them together in the manner I shall describe in dealing with the suture of abdominal wounds. But if the skin has actually disclosed the bone, and is attached by a small strip only, then cut it away and dress the wound with medicaments that will produce firm flesh to replace the skin, and bid the patient go on a diet of solid food such as brawn and gruels and the like. And if decomposition arise in the skin and it will not adhere to the bone, then excise all the diseased part and discard it and then dress.

If in these wounds there be an artery or vein shedding blood, and medicinal applications do not stanch it, then examine the artery, and if you find it not quite severed then cut it through with a scalpel and ligature it; and if you are compelled, our directions being unavailing, then cauterize until the haemorrhage stops. If these be small and simple wounds their treatment will be a light and easy matter; it is sufficient to sprinkle some of this powder on while they are still bleeding, before the atmosphere causes a change. Description of the powder: let one part of olibanum¹ and two parts of dragon's blood be taken, and three parts of quick or slaked lime, all beaten up together and passed through the sieve; and let the wound be packed with this and bound up tightly so that the powder sticks

¹ A dried oleo-gum-resin from the bark of various species of *Boswellia*, used as frankincense.

به ورم حارّ قطنة مغموسة في دهن الورد وحده او مع الشراب الذي فيه قبض، وان أمنت الورم الحارّ فاحمل على الجرح إن كان طرياً بدمه ولم يغيّره الهواء² الذرور الذي أنا واصفه لك بعد قليل، وأما إن كان قد غيّر الهواء³ فاحمل عليه بعض المراهم حتى يمدّ القيح⁴ ثمّ عالجه حتى يبرأ،

فإن كان الجرح كبيراً وكان من قطع سيف أو نحوه ولم تجتمع شفتاه بالرفائد فاجمعه بالخياطة على ما أنا واصفه في خياطة جراح البطن، فإن كان الجلد كشف⁵ العظم وتعلّق ولم يكن امتساكه إلا في معلاق يسير فاقطعه ثمّ عالج الجرح بأدوية تجبر فيه لحماً صلباً عوض الجلد وأمر العليل أن يتغذى بالأغذية التي فيها متانة مثل الرؤوس والهرايس ونحوها، فإن حدث في الجلد عفن ولم يلصق بالعظم فاقطع المتعفن⁶ كله وارم به ثمّ عالجه،

فإن كان في هذه الجراحات شريان أو عرق ينزف الدم منه ولم ينقطع الدم بالأدوية ففتش على الشريان فإن أصبته لم يتبثر فابتره بالمبضع واربطه وإن دعت الضرورة إذا لم ينفع ما ذكرنا فاكوه حتى ينقطع الدم فإن كانت هذه الجراحات صفاراً بساطاً فأمرها سهل هيّن يكفي بعلاجها بأن تذرّ عليها هذا الذرور وهي بدمها قبل أن يغيّرها الهواء⁷، وصفة الذرور أن يؤخذ من اللبان جزءاً ومن الشّيان جزآن ومن الجير المطفاً أو غير المطفاً ثلاثة أجزاء يسحق الجميع وينخل ويحشى به الجرح ويشدّ شدّاً جيّداً حتى يلصق عليه

AB, بسايط H, 4. cett.. العفن M, 3. cett. انكشف عن MV, 2.

cett. بسايطا.

in position and coagulates with the blood. Then bind pads above and let it be, not undoing it so long as it remains without swelling; for the dressing will not come away of itself until it is healed. Lime alone can do this if you have no olibanum and dragon's blood at hand. It has exactly the same effect too on most large wounds, when the application and bandaging are properly done, and when the haemorrhage is recent, so long as the air has not changed them. If, however, the air has brought about some change, especially if it be in the summer season, then there is no point in the application of this powder. Treat it then as we have said, by applying one or other of the suppurative ointments; or by applying a gruel of barley-meal with water and honey, so that the pus flows; then treat by all the usual methods until cured. If, with the wound, there be also fracture of a bone, if it be slight, you should extract it with forceps. I mention the treatment of fractures of the head later on.

On wounds in the neck:¹

If a wound occur in the neck the treatment of it does not differ from that of a head wound, if it be simple. But if a nerve or artery in the neck happens to be cut: if it be a nerve, there is no device that will serve except to avoid treatment of it by strong styptic remedies such as verdigris and vitriol and the like; for these injure the nerve and cause spasm; and under no circumstance let anything cold be applied to the wound, for the substance of the nerve is cold and it is continuous with the brain, which is the most noble among the organs. But let your remedy for it be mild, such as lime slaked in sweet water many times and moistened with olive-oil or oil of roses; and with tutty, likewise washed in sweet water; and other minerals according to this prescription, and with bland ointments. If the wound

¹ Gerard of Cremona's Latin edn. (1520) begins chapter lxxxv here.

لصوقاً جيداً وينعقد بالدم ثم تشده من فوق بالرفائد وتتركه لا تحله
 ما دام لا يتورم فإنه لا ينقلع عنه الدواء حتى يبرأ، وقد يفعل
 ذلك الجير وحده إذا لم يحضر ك اللبان والشيان وقد يفعل هذا
 الفعل أيضاً بعينه في كثير من الجراحات الكبار إذا اتقن⁵ وضعه عليه
 45 وشده وكانت الجراحات طرية بدمها ما لم يغيرها الهواء، وأما إن
 كانت قد غيرها الهواء بعض التغير ولا سيما إذا كان في زمن
 الصيف فليس في وضع هذا الذرور معنى فعالجه بما ذكرنا بأن
 تحمل عليه بعض المراهم المنضجة أو تحمل عليه عصيدة من دقيق
 الشعير مصنوعة بالماء والعسل حتى يمد القبح ثم تعالجه بسائر
 50 العلاج حتى يبرأ، فأما إن حدث مع الجرح كسر في العظم وكان
 يسيراً فاجذبه بالجفت،⁶ وقد ذكرت⁶ علاج كسر الرأس فيما يستأنف،
 في جراحة العنق، فإن حدث الجرح في العنق فليس بينه
 فرق في العلاج وبين جرح الرأس إذا كان بسيطاً وأما إن كان قد
 قطع عصباً من العنق أو شرياناً فإن كان عصباً فليس فيه حيلة غير
 55 أن تجتنب علاجه بما يقبض قبضاً شديداً كالزنجار والزاج ونحوها
 لأنها تؤذي العصب وتشنجه ولا يوضع على الجرح شيء بارد البتة
 لأن جوهر العصب بارد واتصاله بالدماغ الذي هو أشرف الأعضاء
 ويكون ما تعالجه به من الأدوية اللينة مثل النورة المغسولة بالماء
 العذب مرّات مبلولة بالزيت أو بدهن الورد والتوتيا إذا غسلت أيضاً
 60 بالماء العذب وسائر الأحجار المعدنية على هذه الصفة والمراهم

P. وساذكر 6. cett. اتفق M, ادمن V, 5.

be large, use stitches or draw the edges of the wound together with pads; then dress until cured. But if there be depth to the wound and a sinus appears at the bottom of it, in which pus has collected, then make an opening at the site of greatest depth. Now if an artery has been cut in the wound and you are in time to find it still bleeding, divide it or ligature it; or cauterize it if you are compelled to. If it be such a wound that some of the cartilages of the trachea are laid open, or the whole trachea, the jugular veins being safe and sound, then join the skin edges together with a suture over the windpipe, and do not touch the windpipe, but straighten it and restore to its natural form; then tie firmly and leave for some days; then treat with salves having some styptic and astringent quality, until healed. If the wound has affected bone, examine it, and if there be fragments of bone in it get them all out, or all you can. Those you cannot get hold of, leave until the wound suppurates and heals, and it will be easy to extract them. If it be a fresh wound, sprinkle on the powder I have described; and if any bone corrupt in the wound and it becomes a fistula, treat it by those means we shall mention in their place.

On wounds in the chest and between the shoulders:¹

If it be a piercing wound by a spear or a knife, and you see that it is deep, examine if there be a passage of air out of it when the patient breathes; whence you may know that the injury is mortal. But if it is not deep and the haemorrhage is fresh, then do not straight away apply powder or bandage lest it keep the blood in the depths, so that it be returned to the heart and kill the patient; but apply to it a drawing ointment, and uncover it twice daily. If you have no ointment, apply carded cotton to the opening of the wound to soak up the humidities issuing from it. And make the patient

¹ Latin edn. begins chapter lxxxvi here.

الرطوبة، وأما إن كان الجرح كبيرا فاستعمل الخياطة أو ضمّ شفتيه
 بالرفائد ثمّ عالجه حتى يبرأ، فإن كان للجرح غور وحدث فيه مخبأ
 في أسفله قد اجتمع فيه القيح فبطّه في أخفض مكان فيه، فإن كان
 قد انقطع في الجرح شريان وادركت دمه ينزف فابتره أو اربطه أو
 65 اكوه إن دعت الضرورة الى ذلك، فإن كان الجرح قد قطع بعض
 خرزات الحلقوم أو كلّه وسلمت الأوداج فاجمع شفتي الجلد بالخياطة
 على قصبة الحلقوم ولا تمسّ الحلقوم بل سوّه وردّه على شكله الطبيعي
 ثمّ شدّه شداً محكماً واتركه أياماً ثمّ عالجه بالمراهم التي فيها قبض
 وتجفيف حتى يبرأ، فإن كان الجرح قد أثر في العظم ففتشه فإن
 70 كان فيه شظايا من العظم فاجتذّبها كلّها أو ما يمكن منها وما لم
 تتمكّن فاتركه حتى يتعفنّ الجرح ويبرأ ويسهل إخراجّه، فإن كان
 الجرح طرّاً فذرّ عليه الذرور الذي وصفنا فإن تعفنّ في الجرح عظم
 وصار ناصوراً فعالجه بما يأتي ذكره في بابه،

في جراحة الصدر وما بين الكفين، إن كانت طعنة من رمح
 75 أو سكين ورأيت لها غوراً فانظر فإن خرج منها الريح اذا تنفّس
 العليل فاعلم أنّه جرح قتال فإن لم يكن لها غور وكانت طرّة بدمها
 فلا تجعل فيها من أول وهلة الذرور ولا تشدّها لئلا يحتبس الدم
 في غورها فيرتدع الى القلب فيقتل العليل ولكن اجعل فيها مرهماً
 جذاباً وحلّه في النهار مرتين فإن لم يحضر مرهم فاجعل في فم
 80 الجرح قطنة بالية لتمص ما يخرج منها من الرطوبات واجعل نسّوم

H. اكبر 7.

sleep on the (side of the) wound so that what collects therein may flow out. And if three or four days pass by after the wound, and the patient have no spasm or harmful palpitation of the heart nor obstruction to drawing breath, and you see that in other respects he is doing well, you may know that the wound is not dangerous; so treat it with pads and the usual dressings until it heals. But if it will not heal and it permanently discharges pus, you may know that it has become a fistula; look for the treatment of this in the proper place.

If the wound be from a cut with a sword or knife, a straightforward surface wound in the breast or back, then treat it as described before; that is, by suture if it be a great wound or by powder if it be a small one. But if there has also been injury to the bone, cutting out fragments from it, you should explore the wound and hasten to draw out the fragments if they are detached from the bone; but if they are not detached then let be until the wound suppurates, when the removal of the fragments will be easy. Then with regard to other wounds occurring in other parts of the body, the same class of treatment should be used for them as for those already mentioned.

العليل على الجرح ليسيل ما يجتمع فيه، وإن كان قد مضى للجرح
ثلاثة أيام أو أكثر ولم يحدث بالعليل تشنج ولا خفقان ردى ولا
ضيق فى النفس ورأيت سائر أحواله صالحة فاعلم أن الجرح سالم
فعالجه بالقتل وسائر العلاج حتى يبرأ، فإن تعدّر برؤه⁸ ومدّ الفيج⁸
85 دائما فاعلم أنه قد صار ناصورا فعالجه من بابه،

فإن كان الجرح من قطع سيف أو سكين وكان بسيطا فى سطح
الصدر أو الظهر فعالجه بما تقدّم من الخياطة إن كان كبيرا أو
بالذرور إن كان صغيرا، فإن كان قد أثر فى العظم وقطع منه
شظايا ففتش الجرح وبادر بإخراج تلك الشظايا إن كانت متبرئة فإن
90 لم تكن متبرئة فاتركها حتى يعفّن الجرح فإنه يسهل إخراجها، وأما
سائر الجراحات الحادثة فى سائر الأعضاء فحكمها فى العلاج حكم ما
ذكرنا،

8. BV, cett. وقد انفتح .

CHAPTER EIGHTY-FIVE. On wounds of the abdomen, and protrusion of the intestine; and on suturing them.

The tear that occurs in the abdomen may be great or small or it may be middle-sized. From a large tear one or more segments of gut may protrude. The reduction of this and the suture of the wound is an exceedingly hard and difficult matter. Small openings may also be difficult in another way, for they are bound to be harder to reduce, and if you do not hurry to return the gut to its place at once it will swell up and enlarge, thus rendering reduction difficult. So the best tear is the medium-sized, for in this case the reduction of the intestine will not be as difficult as in the two other cases.

Then you should know that suturing the abdomen may be carried out in four ways. Two of them are general; suitable both for suture of the abdomen and for other wounds of the body. The other two sutures are special; they may be used for other wounds, but are more suitable for abdominal wounds. I shall describe each one to you separately, with comments and explanation.

I begin then by saying that when the wound is small, and a piece of intestine protrudes from it, rendering the reduction of it difficult, the difficulty will be due to one of two causes: either on account of the smallness of the fissure, as we said; or because the gut has become inflated on account of the coldness of the air. If the latter case obtains, the gut must be warmed by fomenting with a sponge or piece of cloth bathed with warm water or water in which have been boiled rushes and cyperus and hyacinth, bathing the gut until the inflation is gone down. Wine that is somewhat astringent may do; in bringing down the swelling it is better than plain water. When you see that the swelling has come down, bathe the gut with water in which have been infused althea and mallows; for with this the reduction of the bowel becomes easy, using the lightest effort. But if after

BOOK TWO. CHAPTER EIGHTY-FIVE

Wounds of the abdomen are given a whole chapter by Celsus (VII. 16). He gives a far more comprehensive discussion on the question of the viability of protruded gut, and on prognosis in general, than Albucasis; but he contents himself with describing one style of suture only. Galen (*Meth. Med.* Book VI, chapter 4) (Kühn x. 415) carries

the surgery of the condition further, proposing the use of the fistula knife—*συριγγοτόμιον*—to widen the opening if the gut is irreducible otherwise. This proposal is incorporated in this present chapter; but Albucasis, instead of showing a fistula knife such as that given in chapter 80 (fig. 153), gives a drawing of a curious hook or bill. He describes it as curved,

الفصل الخامس والثمانون في جراح البطن وخراج المعاء وخیاطتها
الخرق الذى يعرض للبطن قد يكون كبيرا وقد يكون صغيرا
ووسطا فالكبير قد يخرج منه معاء او عذة أمعاء فيكون إدخالها
وخیاطتها أشد وأعسر، والخرق الصغير أيضا قد يعسر من وجهه
5 آخر فيلزم أن يكون ردّها أعسر والمعاء إن لم تبادر فى
إدخاله الى موضعه من ساعته انتفخ وغلظ فعسر إدخاله فلهذا صار
أفضل الخروق الخرق المتوسط لأنّه لا يعسر معه ردّ المعاء كما
يعسر فى هذين النوعين،

واعلم أنّ خیاطه البطن على أربعة وجوه الخیاطتان الاثنان
10 عامّتان¹ تصلح فى خیاطه البطن وفى خیاطه سائر جراحات البدن
والخیاطتان الأخريان خاصّتان² تعمّ سائر الجراحات إلا أنّهما أخصّ
بخیاطه البطن وأنا واصفها لك واحدة واحدة بشرح وبيان،
فأقول إنّّه اذا كان الجرح صغيرا وخرج منه شىء من المعاء
وعسر ردّه فذلك لأحد وجهين إمّا لصغر الخرق كما قلنا وإمّا لأنّ
15 المعاء عرض له نفخ من قبل برد الهواء فإذا كان كذلك فينبغى أن
تسخنه بأن تغمس إسفنجة او خرقة رطبة فى الماء الفاتر وحده او قد
طبخ فيه إذ خر وسعدى³ وسنبل وتنطل به المعاء حتّى ينحلّ النفخ
وقد يفعل ذلك الشراب الذى فيه قبض وهو أفضل من الماء وحده
فى تحليل النفخ، فإذا رأيت النفخ قد انحلّ قبل المعاء بما قد
20 طبخ فيه خطمى او خبازى فإنّه يسلس بذلك دخوله⁴ بأيسر سعى،

1. AH. عامتان. 2. AHM. خاصتان. 3. B, H, وسعد. cett.

P. بغير كلفه، H. بايسر ما ينبغى، M. بايسر معنى، BV. بايسر شىء، AS. 4.

this treatment the reduction is still difficult, open up the wound a little with the instrument for opening up haemorrhoids. The first method, if possible, is better than incision, but one may be compelled to incise when other means have failed. This is the form of the instrument (fig. 158). The curved side should be sharpened, but not the other; the slender extremity should not be as slender as a scalpel, but rather blunt; it is an instrument like a small polo-stick, as you see. When the wound is opened up a little with the instrument and the bowel is reduced, it is important to return it to its natural shape and proper position, if you can, for that is better. When the wound is large and in the lower abdomen the patient should lie on his back and have his legs higher than his head; but if it be in the upper abdomen his head and chest should be placed higher than his lower parts. And in the same way if the opening be on one side of the abdomen you should always make it your object to put the wounded side higher than the other. So must you proceed in large or middling wounds. But in small wounds put the patient in a position convenient to yourself. Then have an

with a sharpened inner edge, it seems, and a blunt point. A not dissimilar instrument has already been noticed in chapter 36 (fig. 79) described for tonsillectomy. It might therefore correspond with the *ὀξύκόρακον σμῖλιον* of Paulus (see Comment to chapter 46). As to the use of it, probably the extremity would be inserted into the narrow wound opening in the abdominal wall and the instrument then drawn along so that the sharp inner edge would extend the wound; this would avoid injuring the protruding gut. Hence the expression 'guarded'.

Albucasis then goes on to describe four methods of suturing an abdominal wound. Doubtless, the anatomy of the various layers of the wall was understood; also the importance of suturing each in its place. Among the four he gives that of Galen, described at some length under the term *γαστρορραφία* in his chapter on the subject (*Meth. Med.* vi. 4).

Suture materials used by the Arabian surgeons. Albucasis here mentions only two:

1. *Ants' nippers.* This is not a classical method; but is said to be used by African

tribes as a way of bringing skin edges together. Celsus (v. 26, 23) recommends, in cases where an incised wound gaped much, the use of *fibulae* or, as the Greeks called them, *ἀγκυήρες*. These must have been somewhat like the modern Michel clips; evidently the Arabian ant-nippers acted in the same way.

2. *Gut sutures.* Gut was used by the earliest Greeks for bow-strings (see the *Odyssey* xxi. 408—*εὐστρεφὲς ἔντερον*); but it is not mentioned as used for surgical purposes until the Arab era of surgery. Albucasis then describes it as made of 'rubbed-down gut, well cleansed'. This may be the earliest reference to this now universal suture material.

Other suture materials used by the Arab surgeons, of which most are mentioned elsewhere in this work, are:

4. *Wool;* used in the operation on the eyelids for entropion (Book II, chapter 14). This was also commonly used by the Ancients. Galen alludes to it; also Paulus (vi. 12). Celsus only speaks of *acia mollis*, i.e. soft thread (v. 26, 23).

فإن تعذر رجوعه بعد هذا العلاج فشق في الخرق قليلا بالآلة
التي تشق بها النواصير والعلاج الأول اذا تمكّن أفضل من الشق
وإنما يضطر الى الشق بعد الضرورة وعجز الحيلة، وهذه صورة
الآلة:

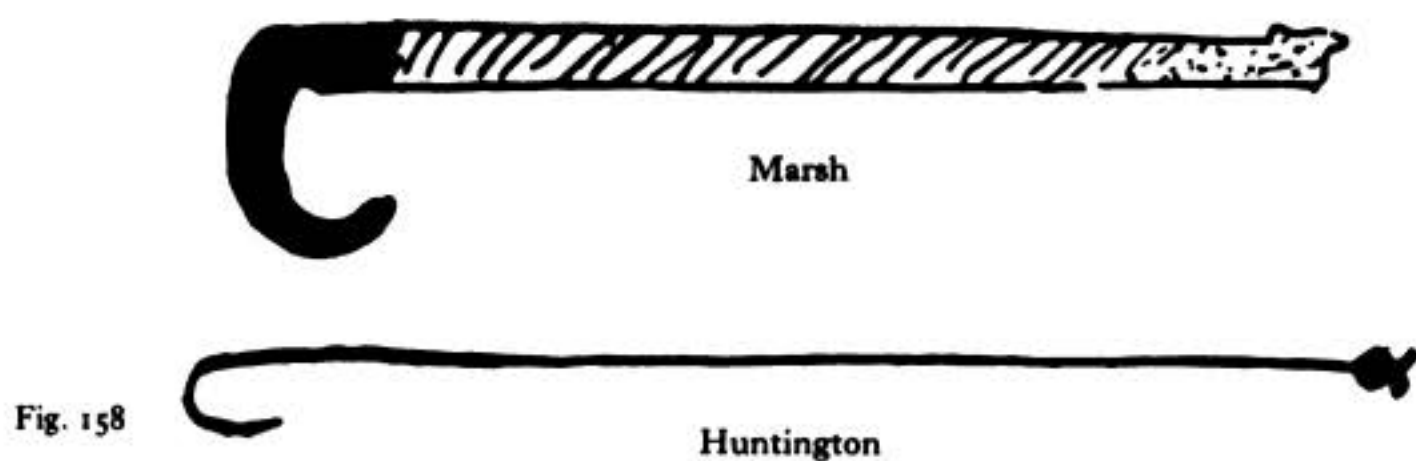


Fig. 158

تكون جهتها الواحدة المعوجة محدودة وجهتها الأخرى غير
محدودة والطرف الرقيق لا يكون برقة الموضع بل يكون أفطس قليلا
وهي آلة تشبه "الصولج الصغير" كما ترى فإذا اتسع الجرح ودخل
المعاء فينبغي أن يكون رده على شكله الطبيعي ومكانه الخاص به
إن استطعت على ذلك فهو أفضل، وأما اذا كان الخرق واسعا
وكان في أسفل البطن فينبغي أن يضطجع العليل على ظهره ويجعل
ساقيه أرفع من رأسه وإن كان في أعلى البطن فيجعل رأسه وصدره
أرفع من أسفله وكذلك إن كان الخرق في أحد الجهتين من البطن
فاجعل قصدك وغرضك دائما الناحية التي فيها الجراحة أرفع من
الناحية الأخرى، وهكذا ينبغي أن يستعمل في الجراحات العظيمة
وفي الجراحات الوسطة وأما في الجراحات الصغار فتضعه على حسب

5. H. الصولجان.

assistant under your direction to enclose within his hands the whole of the wound and bring the edges together, and then uncover it bit by bit for the one who is putting in the stitches.

Now this is the description of one general suture, namely: one or more needles are taken, depending on the size of the wound; then, leaving about the width of the little finger from the end of the opening, pass an unthreaded needle from within through both edges of the skin together with both edges of the peritoneum which lies beneath the skin, piercing from one side to the other; thus you will have brought together both skin edges and both peritoneal edges, making four layers. Then wind a double thread several times round the needle, and tighten up from both sides so as to bring the two edges of the wound perfectly together. Then again leave about a finger's breadth and put in another needle and fasten it with thread as you did in the first instance; and go on doing this with as many needles as you need until you have finished mending the whole wound. The needles should be of medium fineness; for the very fine needles soon cut into the flesh; while thick needles, on the other hand, are difficult to pass through the skin; so they should be medium between fineness and thickness. You should not introduce the needle too near the edge of the skin lest the tissues be soon cut through and the wound gape before it has joined. Nor should there be too great an interval between the stitches, lest the wound be prevented from scarring up. Then cut off the ends of the needles lest they hurt the patient during sleep; and make for him pads of linen scraps to cover the needle ends on both sides; and let them be until you know the wound is healed up. This method of suture with needles is

3. *Silk* is mentioned in connexion with the ligature of the temporal arteries (II. 3).

5. *Linen*, used in the Hippocratic operation of ἀπολίνωσις for fistula, and called ὠμόλινος, is not mentioned for suture in this work.

6. *Hair*, of either ox or horse, is used in the

treatment of pterygium (chapter 16).

7. *Wire*, either gold or silver, is used for wiring in the teeth. These might be the patient's own, when knocked out or loosened by a blow; or they might be artificial ones made of ox-bone (Book II, chapter 33).

ما يتمكّن لك، ثمّ تحضر بين يديك خادما رفيقا يمسك الخرق كلّهُ
 بيديه ويجمع شفّتيه ثمّ يكشف منه لمتولّى⁶ الخياطة⁷ شيئا بعد شيء،
 وهذه صفة الخياطة العامّة الواحدة وهو أن تأخذ إبرة أو عدّة
 إبر على قدر سعة الجرح ثمّ تترك من طرف الخرق قدر غلظ
 40 الخنصر وتغرّز إبرة واحدة من غير أن تدخل فيها خيطا في حافتي⁸
 الجلد مع حافتي الصفاق الذى تحت الجلد من داخل حتّى تنفذها
 من تلك الناحية وقد جمعت حاشيتى الجلد وحاشيتى الصفاق وصارت
 أربع طاقات، ثمّ تشدّ بخيط مثنى حول الإبرة مرّات من الجهتين
 جميعا حتّى تجتمع شفتا الجرح اجتماعا محكما ثمّ تترك قدر غلظ
 45 الأصبع أيضا وتغرّز إبرة أخرى ثمّ تشبكها بالخيط كما فعلت بالإبرة
 الأولى فلا تزال تفعل ذلك بما تحتاج اليه من الإبر حتّى تفرغ برم⁹
 الجرح كلّهُ ولتكن الإبر متوسطة بين الغلظ والرقّة لأنّ الإبر الرقاق
 جدّا سريعا ما تقطع اللحم والغلاظ أيضا عسرة الدخول فى الجلد
 فلذلك ينبغى أن تكون وسطية فى الرقّة والغلظ، ولا ينبغى أن
 50 تغرز الإبرة فى حافة الجلد بالقرب نعلما لئلا ينقطع اللحم مسرعا
 وينفتح الجرح قبل الالتحام ولا تبعد أيضا بالخياطة لئلا يمتنع الجرح
 من الالتحام، ثمّ تقطع أطراف الإبر لئلا تؤذى العليل عند نومه
 وتجعل له¹⁰ رفائد من خرق كتان من كلّ جهة تمسك أطراف الإبر
 وتتركها حتّى تعلم أنّ الجرح قد التحم، وهذا النوع من الخياطة

P. بالخياطة، V. للحياطة. 7. cett. للمتولى، PV² المتلوى، V. المتولى، M. 6.

MV. لها. 10. M. من، B. تضم، AV. بزم، H. ترم. 9. V. ما بين. 8.

most suitable in small wounds, for one or two needles or thereabouts will probably be enough for such.

Now the second kind of general suture is to bring together all four edges, the two skin edges and the two peritoneal edges, at one and the same time, with a needle furnished with a twisted thread of medium thickness. Then when the needle has pierced these four edges bring it back precisely to where you began, so that the thread may lie knitted over the wound to make a stitch in the manner of sewing up the bags in which goods are packed. The distance between stitches should be a little finger's breadth. Everybody is familiar with this stitch. With this stitch I once sewed up a wound that a man got in the belly. He had been wounded with a knife; and the opening of the wound was more than a span long; and by that time there protruded some two spans' length of his mid-gut. The opening was in the middle of his belly; and I reduced it after the bowel had been outside the wound for twenty-four hours. The wound healed in about a fortnight, and I treated him until he was better; and he lived for many years after this, carrying on as usual. The verdict of the doctors was that he could not be healed. The remarkable thing is that I did not treat him with any ointment, for I was in a place where there was no sort of medicine; so twice a day I applied teased-out cotton wool to the wound, and carefully washed it with honey-water until he was healed.

I shall now describe one of the two kinds of special suture according to the text of Galen. You begin at the skin, running the needle from without inwards. When you pass it through the skin and the muscle that runs the

55 بالإبر هكذا أوفق في الجراحات الصغار لأنه قد يكفي في خياطتها بإبرة واحدة أو اثنتين أو نحوها،

وأما صفة الخياطة الثانية العامة فهو أن تجمع بالخياطة الحواشي الأربع أغنى حاشيتي الجلد وحاشيتي الصفاق في مرة واحدة بإبرة فيها خيط مفتول معتدل في الرقة والغلظ ثم إذا نفذت بالإبرة هذه الحواشي الأربع رددت الإبرة من الجهة التي ابتدأت بها نفسها ليقع الخيط مشبكاً من أعلى الجرح لتكون الخياطة على حسب خياطة الأكيسة¹¹ التي يشد بها المتاع وتجعل بين كل خياطة وخياطة بعد غلظ الأصبع الصغير وهذه الخياطة يعرفها جميع الناس، وبهذه الخياطة قد خطت جراحة عرضت لرجل في بطنه كان قد جرح بسكين 65 وكان خرق الجراحة أزيد من شبر وكان قد خرج من معائه نحو شبرين¹² من المعاء الأوسط وكان الخرق في وسط البطن فرددته بعد أن أقام معاؤه خارجاً من الجرح أربعاً وعشرين ساعة فالتحم الجرح في نحو خمسة عشر يوماً وعالجته حتى برئ وعاش بعد ذلك سنين كثيرة يتصرف في جميع أحواله وكان الأطباء يحكمون عليه أنه لا يبرأ البتة، 70 ومن العجب أنني لم أعالجه بمرهم لأنني كنت في موضع لا يوجد فيه شيء من الأدوية فكنت أضع على الجرح القطن البالي مرتين في اليوم في النهار وأتعهد¹³ غسله بماء العسل حتى يبرأ،

وأما أحد النوعين من الخياطة الخاصة فإني أذكره على نص كلام جالينوس وهو أن تبتدئ بالخياطة من الجلد وتدخل الإبرة من خارج إلى داخل فإذا أنفذت الإبرة في الجلد وفي العضلة الذاهبة 75

11. الأكيسة MV. 12. شبر V. 13. H, وافقد B, واععد cett.

length of the belly,¹ leave the edge of the peritoneum on that side where the needle was introduced; and pierce the other edge of the peritoneum from within outwards through the other edge of the abdominal wall. When you have done this, pierce the same edge of the abdominal wall from the outside inwards, leaving the edge of the peritoneum which is on that side, and pierce the other side from within outwards. As you pierce, make the needle pass through the peritoneum to the edge of the abdominal wall that is adjacent to that part until it pierces right through the whole. Then begin again on that same side and sew it together with the peritoneal edge on the opposite side and bring the needle out through the skin nearby. Then reintroduce into the same skin area and sew the opposite peritoneal edge with that abdominal skin edge and bring the needle out through the adjacent skin. Do this once again and repeat until you have sewn up the whole wound after this fashion. In short, this way of suturing is to sew with the stitch used by furriers in sewing skins; thus you stitch the peritoneum once one way with the skin edge and leave it once the other way, until you have done.

Now the manner of the second type of special stitch which Galen mentioned is this (these are his own words): that you suture it in the same way as many practitioners. That is, they suture each part to the part that corresponds naturally to it; so they join one peritoneal margin to the other and one skin margin to the other, in the manner I shall describe. You should

¹ i.e. the rectus abdominis.

على الاستقامة في طول البطن كله تركت الحاقّة من الصفاق في
 الجانب الذي أدخلت فيه الإبرة وأنفذت الإبرة في حاقته الأخرى من
 داخل الى خارج في الحاقّة الأخرى من المراق فإذا أنفذته¹⁴
 فأنفذها ثانية في هذه الحاقّة نفسها من المراق من خارج الى
 80 داخل ودع حاقّة الصفاق الذي في هذا الجانب وأنفذ الإبرة في
 حاقته الأخرى من داخل الى خارج وأنفذ مع إنفاذك لها في
 الصفاق الى¹⁵ حاقّة المراق التي في ناحيته حتى تنفذ فيها كلها ، ثم
 ابتدئ أيضا من هذا الجانب بعينه وخطه مع الحاقّة التي من الصفاق
 في الجانب الآخر وأخرج الإبرة من الجلدة التي بقره ثم ردها في
 85 تلك الجلدة وخط حاقّة الصفاق التي في الجانب الآخر مع هذه
 الحاقّة من المراق وأخرجها من الجلدة التي من ناحيته ، وافعل ذلك
 مرة أخرى وافعله مرة بعد مرة الى أن تخط الجراحة كلها على ذلك
 المثال ، وجملة صفة هذه الخياطة أن تخاط خياطة الفرائين للفراء
 بأن تخط الصفاق مرة من جهة واحدة مع¹⁶ حاقّة الجلد¹⁷ وأن تتركه¹⁸
 90 مرة من الجهة الأخرى حتى تفرغ ،

وأما النوع الثاني من الخياطة الخاصّة التي ذكرها أيضا
 جالينوس فهذا¹⁸ كلامه نصا وهو أن تخطها على مثال ما تخطها قوم
 من المعالجين بأن يجمعوا كل جزء الى نظيره المشاكل له بالطبع
 فيضمون حاقّة الصفاق الى حاقته الأخرى وحاقّة المراق الى حاقته
 95 الأخرى وذلك يكون على ما أصف لك ، ينبغي أن تغرز الإبرة في

M. وأخرى 17. codd. من 16. ABV. في 15. codd. أنفذته 14.

codd. وهذا 18.

put the needle from without inwards, in that edge of the abdominal wall that is nearest to you, and make it pass inward through that alone, leaving out the peritoneal edges; then turn the needle round and run it from without inwards through both peritoneal edges. Then turn it round again and make it pierce, from within outwards, the other edge of the abdominal wall, on the opposite side. This type of suture is better than the easy general suture that has been mentioned. These are Galen's very words. Some have said that the suture of the abdomen may be performed with two needles, thus: you thread one thread into both and begin by introducing the needle into that part near you and carrying it through to the other side. Then you insert the other needle on the far side and bring it through to the near side, after the manner of the shoemaker's stitch.

You must understand that when the fissure is in the middle of the abdomen the sewing of it is more difficult than in other parts of the abdomen. But the medical treatment of the wound comes under just the same heading as that of other wounds. When you find a wound with its blood quite fresh, before the atmosphere has altered it, and you have reduced the intestine and have sewn it up and closed it firmly, apply to it powder to encourage fresh growth. But if the air has altered it, then apply to it some of the available ointments until it suppurates and the threads come away and the peritoneum and abdominal wall heal; then dress it as you would any other wound, until it is better. If you have no medicaments to hand, apply cotton wool as soon as suppuration begins, and change it twice daily, as I have taught you, until it heals. You will need no other treatment in the majority of cases when the wounds are simple.

حاشية المراق القريبة منك من خارج وتنفذها الى داخل فيها وحدها¹⁹
وتدع حاشيتي الصفاق ثم ترد الإبرة وتنفذها من خارج الى داخل
في حاشيتي الصفاق كليهما ثم تردّها أيضا وتنفذها من داخل الى
خارج في حاشية المراق الأخرى التي في الجانب المقابل ، وهذا
الضرب من الخياطة أفضل من الخياطة العامة السهلة وهي الخياطة¹⁰⁰
التي تقدّم ذكرها ، فهذا كلام جالينوس نصّا²⁰ ،
وقد قال بعضهم قد تستقيم²¹ خياطة البطن بإبرتين وذلك أن
تدخل فيهما خيطا واحدا وتبدأ بإدخال الإبرة من عندك²² وتنفذها
الى الجانب الآخر²³ وتدخل الإبرة الأخرى من الجانب المقابل له
فتنفذها من عندك^{23,24} على حسب خياطة الأساكة سوا ،¹⁰⁵
واعلم أنّ الخرق اذا كان في وسط البطن فإنّ خياطته أعسر
من سائر مواضع البطن ، وأما مداواة الجرح فحكمه في مداواته حكم
سائر الجراحات وذلك أنك اذا أدركت الجرح طرّا بدمه قبل أن
يغيّره الهواء ورددت المعاء وخطته وأحكمته فاحمل عليه الذرور الطعم
فإن كان الجرح قد غيّر الهواء فاحمل عليه بعض المراهم التي¹¹⁰
تحضرك حتى يقيح وتسقط الخيوط ويلتحم الصفاق والمراق ثم تعالجه
كعلاجك سائر الجراحات حتى يبرأ ، فإن لم تحضرك أدوية فاحمل
عليه منذ يبتدئ بالقريح القطن البالى وابدله مرتين في النهار كما
أعلمتك حتى يبرأ فإنك لا تحتاج الى علاج آخر في أكثر الأحوال اذا
كانت الجراحات بسيطة ،¹¹⁵

M. في تقسيم H, سغنم 21. AMP. أيضا 20. codd. وحده 19.

M. عندنا 24. M, om. cett. 23. MV. عندنا 22.

But if you fear that the important organs may share the hurt of the wound, then you should dip some soft wool in moderately warm olive-oil or oil of roses and bind it round the various sites between the groin and the axillae. If pain or gangrene be felt in the bowels—and that frequently happens—then clyster him with tepid astringent black wine, particularly if the gangrene has already set in in the bowel and has become a wound penetrating to the abdominal cavity. You should know that if the injured bowel be the large intestine it will heal the more easily, while if it be the small its healing is more difficult. But the part of the bowel called the jejunum is not likely to recover from an injury to it at all; and that is due to the number and size of arteries in it and to the thinness of its structure and to its nearly approaching a nerve in its character. If what protrudes from the wound be omentum, and you find it freshly protruding, then reduce it as you do intestine. But if some time has lapsed and it has turned green or black, you should ligate it above the site where it has gone black lest there be a haemorrhage; for the omentum contains veins and arteries. Then cut off what is below the ligature and leave the ends of the thread hanging out from the lower part of the wound, so that it will be easy for you to draw upon it and extract it as the omentum falls away and the wound suppurates.

A note on the wound occurring in the intestine.¹ When a break occurs in the intestine and it is a small one, it is possible, in some men, that it may mend. For I myself saw a man who had been wounded by a spear-thrust in the abdomen. The wound was to the right of the stomach, and, being chronic, became a fistula whence issued faeces and flatus. I set about treating him, though I had no hope of his recovery, and I continued to attend him, and eventually he recovered and the place healed over. And when I saw that the place had healed over I was afraid for the patient lest

¹ P shows this as beginning chapter 86.

فإن خشيت أن تشارك الجرح الأعضاء الرئيسة في الألم فينبغي
 أن تغمس صوفاً لينا في الزيت المعتدل الحرارة أو في دهن الورد
 وتضعه حول المواضع التي فيما بين الأريّة والإبط، فإن أحسّ
 بوجع أو عفن في معائه فكثيراً ما يعرض ذلك فاحقاً بشراب قابض
 120 أسود فاتر ولا سيما إن كان العفن قد بلغ في المعاء وصار جرحاً
 نافذاً إلى جوفه، واعلم أن ما كان من الأمعاء²⁵ غليظاً فهو أسهل
 برأً وما كان منها رقيقاً فهو أعسر برأً وأما المعاء المعروف بالصائم
 فإنه لا يقبل البرء من جراحة تقع به البتة وذلك لكثرة ما فيه من
 العروق وعظمها ولرقة جرمه وقربه من طبيعة العصب، وأما إن كان
 125 الذي برز من الجرح الشرب وأدركته طرياً فردّه على حسب رذك
 المعاء سواء، فإن مضى له مدة وقد اخضرّ أو اسودّ فينبغي أن
 تشدّه بخيط فوق الموضع الذي اسودّ منه لئلا يعرض نزع دم فلان
 في الشرب عروقاً وشرينات، ثم تقطع ما دون ذلك الرباط وتجعل
 طرفي الخيط متعلقين من أسفل الجراحة خارجاً منها ليسهل عليك
 130 سلّه وإخراجه عند سقوط الشرب وتقيح الجرح،
 ذكر الجرح الذي يعرض في المعاء، فأما إذا عرض خرق في
 المعاء وكان صغيراً فقد يمكن أن ينجبر في بعض الناس من أجل
 أني رأيت إنساناً كان قد جرح في بطنه بطعنة رمح وكان الجرح عن
 يمين المعدة فأزمن الجرح وصار ناصوراً يخرج منه البراز والريح
 135 فجعلت أعالجه على أني لم أطعم في برءه فلم أزل أطفه حتى برئ
 والتحم الموضع، فلما رأيت الموضع قد التحم خشيت على العليل أن

25. المعاء codd.

some harm should occur in the abdominal cavity; but absolutely no harm arose from it, and he remained perfectly well and healthy, eating and drinking and engaging in coitus and going to the bath and carrying out the duties of his office.

Some men of experience have said that when a wound occurs in the intestine and it is small, it should be sutured in this manner, namely: ants with large heads are taken; then the edges of the wound are brought together and one of these ants is applied by its open jaws to the two edges of the wound, and when it seizes it and closes its jaws then the head is cut off, and it will stick and will not loosen. Then another ant is applied near the first; and you proceed after this manner with a number of ants according to the size of the wound. Then reduce the intestine and sew up the wound; for the heads will remain sticking to the intestine until it is healed up; and no harm will come to the patient.

The intestine may also be sewn up with the fine suture which is extracted from an animal's gut and sticks to it after being threaded in a needle.¹ The method is that the end is taken of this suture made of gut, well scraped; and to this end is fixed a fine linen thread, twisted, and then that thread is passed through the needle affixed to the suture of animal's gut, with which the intestine is sewn and then replaced in the abdominal cavity. These kinds of suture, with the ants and with the gut, are by way of a remote hope. But if the opening be great and wide, and especially if it be in one of the small intestines, there is no technique to deal with it, nor any cure.

¹ So in all the MSS., but the sense is obscure.

يحدث عليه حادث سوء في جوفه فلم يعرض له من ذلك حادث سوء
البتة وبقى في أفضل أحواله صحيحا يأكل ويشرب ويجامع ويدخل
الحمام ويرتاض في خدمته²⁶

140 وقد ذكر بعض أهل التجربة أنه متى عرض في المعاء جرح وكان
صغيرا فينبغي أن يخاط على هذه الصفة وهو أن يؤخذ النمل الكبار
الرؤوس ثم تجمع شفتا الجرح ثم توضع نملة منها وهي مفتوحة الفم
على شفتى الجرح فإذا قبضت عليه وشدت فمها قطع رأسها فإنها
يلصق ولا ينحل، ثم توضع نملة أخرى بقرب الأولى ولا تزال تفعل
145 ذلك²⁷ بعدة نمل²⁷ على قدر الجرح ثم ترد وتخييط الجرح فإن تلك
الرؤوس تبقى لاصقة في المعاء حتى يتغير المعاء ويبرأ ولا تحدث
بالعليل آفة البتة،

وقد يمكن أن يخاط المعاء أيضا بالخيط الرقيق الذي يسئل من
مصران الحيوان²⁸ اللاصق به²⁸ بعد أن يدخل في إبرة وهو أن يؤخذ
150 طرف هذا الخيط من المصران فيسلى نعلما ثم يربط في طرفه خيط
كان رقيق مفتول ثم يدخل ذلك الخيط في الإبرة²⁹ وفيه خيط²⁹ المصران
فيخاط به المعاء³⁰ ثم يرد³¹ إلى الجوف³¹ وهذا الضرب من الخياطة
بالنمل والمصران إنما هو على طريق الطمع والرجاء، فأما إن كان
الخرق كبيرا واسعا ولا سيما إن كان في أحد الأمعاء الرقاق فليس
155 فيه حيلة ولا منه برء البتة،

بعدد نمل، H بنملة بعد نملة. 27. P. مدته، H حركته، A حديثه. 26.
cett. وحاط به، M. 29. lacuna in P. 28. M. بعده النمل، P.
cett. في الخرق، M. 31. M، om. cett. 30. M، فحيط به المعاء.

CHAPTER EIGHTY-SIX. On the treatment of defluxions and fistulae.

You should know that any wound or tumour, when it becomes old and chronic, and turns into an ulcer, and does not heal over, but discharges pus chronically and constantly, is generally called a fistula, in whatever part of the body it may be; but we call it¹ a defluxion. The fistula proper is a compact hard white painless induration with a central hollow like a bird's quill; on which account some call it a quill. At certain times it may be moist, constantly discharging pus; and again at certain times the moisture may cease; and the discharge may be greater or less; and it may be thick or thin. I said previously in the appropriate section, when I was discussing abscesses, that any ulcer that would not heal nor show growth of tissue was due to one of nine causes. One is lack, or poorness, of blood in the body; or it may be because the hardness of the tissues, internally and at the edges of the opening, prevents the growth of sound tissue; or it may be because of the abundance of foul and evil matter; or it may be because the ulcer is necrotic in itself and the matter that it discharges is of bad quality; as also it may be because the remedy used in treating it is not suitable; or again it may be because of corruption arising at that locality, of the nature of pestilence; or it may be due to something special and peculiar in the locality—as happens in the city of Saragossa, where diseases tend to linger and tumours are naturally slow to heal; or it may be due to one or more bones in it. I have indeed already, in their proper place, explained all these causes and their symptoms and their medical treatments. Now here I must explain to you the operative treatment of fistula and defluxion.

You should know that a fistula may happen in any part of the body; and

¹ M reads 'but it is permissible to call it'.

BOOK TWO. CHAPTER EIGHTY-SIX

The history of bone surgery begins with the absolutely authentic Hippocratic works *Περὶ ἀγγῶν* and *Περὶ τῶν ἐν κεφαλῇ τραυμάτων*. Chapter 33 of *Περὶ ἀγγῶν* gives the indications for resection of the bone—*ἀποπρίειν ὀστέον*—in a case of compound fracture. Galen speaks similarly of the amputation of bone ends (*ἀπόπρισις*) in certain cases (*Meth. Med.* VI. 6). Then Celsus says (VIII. 2) that if the blackness goes right through the bone it should be cut out, and gives the clinical indications. Archigenes, in a work now only

preserved in fragments found as quotations in later writings, devotes an important chapter to amputation, giving the indications under the headings of necrosis, gangrene, sepsis, phagedena, and carcinoma. He seems to have been the first to describe fully the operative details of amputation (*ἀποκοπή*), and strongly recommended the cautery (in Oribasius XLVII. 13).

Turning now to this remarkable and interesting chapter there is presented to the reader, to begin with, a clear account of the

الفصل السادس والثمانون فى علاج الزكام والناصور

اعلم أنّ كلّ جرح أو ورم إذا أزمّن وتقادم وصار قرحة ولم
يلتحم وكان يمدّ القيح دائما لا ينقطع فيستوى على الجملة فى آى
عضو كان ناصورا "ونحن نسمّيه" زكاما ، والناصور هو على الحقيقة تعقّد
5 متلبّد صلب أبيض لا وجع معه له تجويف كتجويف ريش الطير ولذلك
سمّاه بعضهم ريشة ، ويكون فى بعض الأوقات رطبا يمدّ دائما القيح
وربّما انقطعت الرطوبة فى بعض الأوقات وقد تكون هذه الرطوبة كثيرة
وتكون قليلة وتكون غليظة وتكون رقيقة ، وقد قدّمت فى التقسيم عند
ذكرى الجراحات أنّ كلّ قرحة لا تبرأ ولا ينبت فيها لحم فإنّما ذلك
10 لأحد تسعة أسباب أحدها إمّا لقلّة الدم فى البدن وإمّا لردائه وإمّا
لأنّ فى داخلها وعلى شفتيها لحم صلب يمنع نبات اللحم الجيّد وإمّا
أنّها كثيرة الوضّر والوسخ وإمّا لأنّ القرحة فى نفسها عفنة والمادّة
التي تمدّها رديئة الكيفيّة وإمّا لأنّ الدواء غير موافق فى علاجها وإمّا
لفساد وقع فى البلدة من جنس الوباء وإمّا لخاصّة فى البلدة كما
15 يعرض فى مدينة سرقسطة التي يعسر فيها نضج الأمراض ويبطئ فيها
برء الأورام بالطبع وإمّا لأنّ فيها عظما واحدا أو عدّة عظام ، وقد
بيّنت جميع هذه الأسباب وعلاماتها وعلاجاتها بالأدوية فى التقسيم
وينبغى لى هاهنا أن أعرفك بعلاج الناصور والزكام الذى يكون بطريق
العمل باليد ،

20 اعلم أنّ النواصير قد تحدث فى جميع أعضاء الجسم فمنها نواصير

P. الرضّ 4. BH. لانها 3. cett. فيه 2. V, M. وجوز تسميته 1.

some fistulae reach as far as some great vein or artery or nerve or membrane or intestine or the urinary bladder, or one of the ribs or dorsal vertebrae, or some highly complex joint such as the hand or foot, while some terminate quite near some major organ, and so on. Fistulae of this kind are among the diseases from which recovery is difficult; they are not amenable to treatment and to occupy oneself with them is labour in vain. But if there are any fistulae which do not reach in depth the places we have mentioned, and you have some hope and expectation of curing them, and you wish to attain to recognizing these, then you take a probe of bronze or iron, if the fistula run in a straight line, and investigate it with that. But if the fistula be tortuous then investigate it with a thin leaden probe; for lead is soft, so as to flex on entry and follow the curves of the fistula. But if the fistula have multiple openings so that you cannot explore it with the probe, then make an injection into one of the openings. The fluid you inject into that one will run to the other openings and flow out from them. Then make a complete exploration by whatever means you can, to find out whether there be at that place a bone or nerve, and whether the fistula be deep or superficial, and whether the fistula be one with multiple openings. Inform yourself of all these points, exerting yourself to inquire of the patient whether he feels pain while you are compressing with the hand, and seeking other indications and causes of tumour that may arise. When you have made quite certain of all these points, then proceed confidently with the

pathogenesis of sinus formation, with instructions how to approach the problems of diagnosis and treatment; always supposing the case to be one of underlying bone necrosis.

This is followed by an attractively written account of the clinical detail of a case from his own private practice, furnishing illustrations of various points he had already dealt with earlier in the chapter.

Finally he gives short descriptions, with careful illustrations, of the various instruments required for the surgery of bone.

1. *Probes*. These, essential to reveal depth, direction and origin of a discharge, and to establish whether the sinus be single or multiple, have already been discussed at chapter 46.

2. *Saw*. منشار—*minshār*. Albucasis shows a greater variety than we can find in the descriptions of the Classical authors.

Figure 159 shows a semicircular saw with a short stout handle.

Figure 160 is of an elliptical or, in the Huntington MS., a heart-shaped instrument. Then Figure 161 is a saw in three-quarters of a circle. It is not clear from Albucasis' text what purposes these unusual shapes would serve; and they do not seem to follow any known classical design. Figure 162 is clearly that of the straight amputation saw corresponding with Galen's *μαχαίρωτος πρίων*, the *serrula* of Celsus (vi. 33) and the plain *πρίων* of Antyllus (quoted in Oribasius, XLIV. 22 and 23) Fig. 166 is an interesting design suggestive of a bow-saw. Both draw-

تنتهي الى أوراد عظيمة وشرينات او الى عصب او الى صفاق او الى معاء او الى مثانة او الى ضلع من الأضلاع او الى فقار من فقرات الظهر او الى مفصل من المفاصل المرغبة تركيبا كثيرا مثل اليد والرجل ومنها ما يفضى الى قرب عضو رئيس ونحو ذلك، فما كان من هذه النواصير على هذه الصفة فهي من الأمراض العسرة البرء التي لا تقبل العلاج والاشتغال بها عنا⁵ وجهل⁶، فإن كان من النواصير ما لم يصل الى هذه المواضع التي ذكرت ورجوت وطمعت في علاجها وأردت أن تتوصل الى معرفة ذلك فخذ مسبارا من نحاس او حديد إن كان الناصور يمر⁷ على استقامة ففتشه به، فإن كان في الناصور تعرج⁸ ففتشه بمسبار من رصاص رقيق لأن الرصاص يلين جسمه⁹ فيسلس عند الدخول⁶ وينعطف نحو التعرج، فإن كان الناصور ذا أفواه كثيرة لا يمكنك أن تستدل عليها بالمسبار فاحقن منها فمًا واحدا من أفواهه فإن الرطوبة التي تحقنه بها تسلك نحو الأفواه الأخر وتسيل منها ثم استقص التفتيش على أي وجه أمكنك لتعرف إن كان هناك عظم او عصب او كان الناصور قعره بعيدا او قريبا او كان ناصورا واحدا له أفواه كثيرة وقف على جميع ذلك بمبلغ طاقتك من⁷ استخبارك العليل وجوده⁸ الألم عند غمز يدك على الموضع ونحو ذلك من الدلائل والأسباب الحادثة للورم، فإذا وقفت على جميع ذلك وقوف حقيقة فحينئذ فصر الى العلاج على ثقة وهو أن تنظر فإن كان

5. V, سلس, B, يسلس عند الدخول, P. 6. V, هو, H, يمتو, A, يعد.

وجوده, B, وجود, HM. 8. BV. مع. 7. M, ويسلس, H, يسلس, A, يسلس

cett.

treatment, namely: see if the fistula be obvious and accessible, or in a harmless situation far removed from a joint or vein or artery or tendon or any of the other places I have mentioned to you. Then lay open the fistula by the method I have described and fetch out of it all the granulations and diseased and superfluous tissue and whatever tissue or growth be arising in its opening, and dress until healed. If the termination of the fistula lies deep and its course be straight, you should cut it open as far in as you can and then clean out of it all diseased tissue; then use swabs soaked in corrosive, and push them to the bottom of the fistula, which is as far as you can reach with the probe. Do this repeatedly until the caustic has destroyed all the superfluous matter remaining at the bottom of the fistula. Then dress it with ointments that make the flesh grow sound, until it heals. But if it does not heal thus, then cauterize it in the prescribed way.

If a bone be the cause of the fistula, and you are sure of that, then examine the fistula and open it up in the way I have told you, if there be nothing in the way like a blood-vessel or nerve or important organ, as we said. And if the bone is laid bare to you and there be in it some corruption and blackening, then scrape it until all the corruption be removed; then put on dressings that will encourage granulation, until it be healed. If it does not heal but discharges pus in the way it did before, then you may know that you have not yet managed to extirpate the corruption completely. Therefore you must expose it again and with the utmost diligence carry out the scraping and cleaning of it. Then dress it; and if it heals, good; if not, then you may know that this corruption is very deep-seated in the body and out of reach, and there is nothing you can do for it but leave it to nature. If the diseased bone be a small one, and it be possible for you to extract it, then do so with a pair of fine forceps suited to the purpose. And if there be a number of bones then you must accurately carry out the extraction of

ings seem to show a metal bow-shaped spring between whose ends is stretched a narrow or ribbon saw blade.

3. *Raspatory* — مجرد — *mijrad*—literally a scraper. A profusion of varieties is shown; it seems that much of the bone-surgery was to be done with this type of instrument. A round-headed one is shown first (fig. 163) 'like the head of a nail, stellate', as Albucasis describes it; it is the same in both MSS. and is much like the 'rough-head' of chapter 19 (fig. 60) but much larger for dealing with limb

bones; fig. 164 is a smaller model. Fig. 165 shows another, here with a smooth surface; doubtless more of a gouge. Figs. 167 and 168 show a wedge-shaped scraper, according to the Marsh MS., serrated. Then the next drawing (169) is shown by Marsh only and seems designed for use at either end, both being shaped for special or difficult sites. The right-angled scrapers of fig. 170 would seem to have the same purpose. Then comes a scraper 'resembling a probe' (*mishār*) shown in fig. 171. Following the figures of the chisel

40 الناصور ظاهرا قريبا او فى موضع سالم بعيد من مفصل او عصب او
شريان او وريد او أحد المواضع التى ذكرت لك فشق الناصور على
ما تقدم من وصفى وانتزع ما فيه من التلبّد واللحم الفاسدة واللحم
الزائدة وما ينبت فى فمه من لحم او ثلّول ونحو ذلك وعالجه حتّى
يبرأ، فإن كان الناصور بعيد القعر وكان على استقامة فينبغى أن
45 تشقه فى العمق قدر ما أمكك ثم تنقيه من جميع لحومه الفاسدة ثم
استعمل الفتل الملوثة فى الأدوية الحادة ودسها الى قعر الناصور
الذى تدركه بالحديد، افعل به ذلك مرّات حتّى يأكل ذلك الدوا
الحادّ جميع ما بقى فى قعر الناصور من الفساد ثم اجبره بالمراهم
التى تنبت اللحم صحيحا حتّى يبرأ فإن لم يبرأ بذلك فاكوه على ما
50 تقدم وصفه،

فإن كان سبب الناصور عظم وصحّ ذلك عندك ففتشه وشقه على
ما أخبرتك إن لم يمنعك مانع من عرق او عصب او عضو رئيس كما
قلنا، فإن انكشف اليك العظم وكان فيه بعض الفساد والسواد
فاجرده حتّى يذهب فسادّه ثم عالجه بما يلحمه حتّى يبرأ، فإن لم
55 يبرأ وأمدّ القيح كما كان يفعل فاعلم أنّك لم تصل الى جميع استئصال
الفساد فاكشف¹⁰ جميع ما¹⁰ عليه¹¹ ثانية واستقص جرده وتنقيته بأبلغ جهدك
ثم اجبره، فإن برئ وإلا فاعلم أنّ ذلك الفساد فى غور بعيد من
الجسم لا تدركه فليس لك فيه حيلة إلاّ إسلامه الى الطبيعة، فإن
كان العظم الفاسد عظما صغيرا وأمكك جذبه فاجذبه بالكلايب
60 اللطاف التى تصلح لذلك فإن كانت عظام كثيرة فاستقص جذبها كلّها

9. V. وجوده فشقه M. ووجدته فشقه B. ودسه P. فشقه.

10. BP, om. M. عن 11. cett.

all of them, and spare no effort to ensure that none is left. If any ligaments lie in your way and there be no danger in incising them, then make an incision into the ligaments and whatever tissues are there, and free the bones. If it is not possible for you to extract the bone immediately, apply over the wound something to induce suppuration, and leave it for some days until suppuration has set in in the tissues and ligaments around the bones. Keep an eye on the wound lest the incision that you made during your operation close up; if you fear this, apply to it cotton wool soaked in sulphur beaten with olive-oil, or cotton soaked in Egyptian ointment or in one of the green ointments. Then, when those ligaments have been softened by putrefaction and the bones crumble, it will be easy to shift them and take them out. If it be one large bone such as the tibia or the femur or the like, and the diseased part be only the surface, then scrape it thoroughly until all the blackness and corruption is gone, then close the wound. If the corrupt portion be very extensive and reach to the marrow of the bone, you will not be able to avoid sawing it off and cutting it all away to the point where the corruption ends; then dress until healed.

Now I shall tell you of a defluxion that once occurred in a man's leg, as an example and a help to you in your treatment. This man was young, about thirty years of age. He once got a pain in the leg from something internal, which so worked that eventually matter came into the leg and caused it to swell greatly, there being no external cause. And time passed by, to the accompaniment of error on the part of the doctors, until the tumour opened and much discharge came away; and the treatment was so mismanaged that fistulae formed in the leg and many sinuses opened

three more scrapers appear in fig. 174 to 175A which are only variants of types already given. In his third book, chapter 2, Albucasis describes a scraper for the removal of a bone flake in a flake-fracture of the skull; he gives no figure.

The *mijrad* of the Arab surgeons, corresponds with the ξυστήρ of the Greek writers. Hippocrates himself in his *Περὶ τῶν ἐν κεφαλῇ τραυμάτων*, chapter 14, speaks of scraping in the depths of the wound with this instrument . . . χρὴ τῷ ξυστήρι. Galen (*Meth. Med.* vi. 6) describes how a surgeon must have a variety of shapes and sizes at hand for the various incisions and for the different types of head injury. He should begin with the larger and

go on with the smaller until, in working on the diploë, the slenderest are to be used. Such an idea evidently inspired Albucasis.

4. *Osteotome or chisel*—مقطع—*miqṭa'*—really means, quite non-specifically, a cutting instrument. Only two are given in this chapter. The first (fig. 172) is large and heavy. The Marsh drawing indicates it as a kind of cold chisel with a right-angled upper extremity to receive the blow of the hammer. The Huntington drawing has a point; but it is likely that the scribe intended this for an edgewise view to demonstrate in cross section the wedge shape of the instrument. Figure 173 is a smaller version of the first. It is

ولا تترك منها شيئاً جهداً فإن اعترضك شيء من الرباطات دونها ولم يكن في قطعها خطر فاقطع تلك الرباطات واللحم إن كانت هناك وخلص العظام، فإن لم يأت لك انتزاع العظام من وقتك فأحمل على الجرح ما يعقنه واتركه أياً ما حتى يعفن ما حول تلك العظام من اللحم والرباطات واحفظ الجرح لا يلتحم الشق الذي كنت شققت في خلال عملك بل ضع عليه إن خشيت ذلك قطننة مغموسة في الكبريت المسحوق مع الزيت او قطنة مغموسة في المرهم المصري او أحد المراهم الخضر فأيتها اذا عفنت تلك الرباطات وتبرت العظام سهل انتزاعها وجذبها، فإن كان عظماً واحداً كبيراً مثل عظم الساق او عظم الفخذ ونحوه وكان الذي فسد منه وجهه فقط فاجرده جرداً بليفاً حتى يذهب ذلك السواد والفساد ثم اجبر الجرح، فإن كان الذي فسد منه جزءاً كبيراً وكان الفساد قد بلغ مخ العظم فلا بد من نشره وقطعه كله الى حيث ينتهي الفساد فحينئذ فعالجه حتى يلتحم،

75 وأنا أخبرك بركام كان قد عرض لرجل في ساقه لتجمعه مثلاً ومنا على علاجك، كان هذا الرجل حدث السن⁽¹²⁾ نحو الثلاثين عاماً⁽¹²⁾ قد عرض له وجع في ساقه عن سبب تحرك عليه من داخل البدن حتى اتصلت الموائ الى الساق وتورم ورماً عظيماً ولم يكن سبب من خارج ثم تنادى به الزمان مع خطأ الأطباء حتى انفتح الورم وجرت منه موائ كثيرة وأسئ في علاجه حتى تزكم الساق وصارت فيه أفواه كثيرة

80 من بناء نحو P، من ابناً الثلاثين سنة B، له نحو الثلاثين عاماً 12. AH. ثلاثين سنة

up, all of which discharged pus and body humours. A whole host of doctors had been treating it for a matter of two years, not one of whom had any skill in the surgical art. Eventually he sought me. I saw his leg, with matter coming away from the orifices in large quantities; and the man's body was wasted and jaundiced. So I introduced a probe into one of the openings and the probe touched bone. Then I investigated all the openings and found them all communicating with one another in all parts of the leg. So I quickly cut down upon one of these openings until a part of the bone was laid bare, and I found it diseased, by now eaten away, and black and foul and full of holes, down to the marrow. So I sawed off as much of the diseased bone as I had exposed and could get at. In fact I thought that there was no more disease in the bone beyond what I had cut and sawn away, and that I had completely eradicated it. Then I tried for a very long time to heal the wound with medicines encouraging growth of flesh, but it would not heal. Then I again uncovered the bone, above the first opening, and found the corruption co-extensive with the bone. So again I sawed away as much of the corruption as I could see; then I tried to heal it, but it would not heal nor unite. Then I opened it up once more and went on cutting away the bone piecemeal and trying to heal it, and it would not heal until I had cut away about a span of bone with the marrow; then I treated it medicinally and it quickly healed over and was cured. But it would not have been necessary to repeat the operation and the incision thus, were it not for the patient's weakness and inability to tolerate much at a time, and because of my fears for his life, since an evil faint was constantly seizing him on account of the heavy drain. But he was completely cured, and in place of the bone there grew up firm tissue; his bodily state was sound and his strength was restored. He went about his business, and no hurt whatsoever came to him from walking.

strange that Albucasis should be so sparing of his osteotomes, considering what a range the classical authors described and used. The simple form was called *ἐκκοπεύς* but does not go so far back as Hippocrates. Celsus (VIII. 4) refers to it as *scalper*. Heliodorus recommends the *ἐκκοπεύς* for resecting a rib; Paulus, for re-breaking a mal-united fracture (VI. 109). Albucasis evidently has the osteotome or chisel more in mind for use in dealing with injuries to the cranium; for in Book III. 2, discoursing on the subject,

he frequently refers to it, more than in this present chapter on general bone surgery. He gives illustrations of cranial chisels (figs. 188 and 189). He also shows the lenticular chisel (fig. 191) which exactly corresponds with the classical *φακωτὸς ἐκκοπεύς*. While the Huntington drawing is nearly meaningless, the Marsh drawing shows a heavy waisted metal head with a rounded blunt lentil-shaped tip to protect the brain and meninges; the sides seem to have been sharp; the handle probably was of wood (see also the Comment

كلها تمدّ القيع ورطوبات البدن فعالجه جماعة من الأطباء نحو عامين
 ولم يكن فيهم حاذق بصناعة اليد حتى قصدنى فرأيت ساقه والمواد
 تسيل من تلك الأفواه سيلانا عظيما والرجل قد نحل جسمه واصفرّ
 لونه فأدخلت المسبار فى أحد تلك الأفواه فأفضى المسبار الى العظم
 85 ثم فتشت الأفواه كلها فوجدتها تفضى بعضها الى بعض من جميع
 جهات الساق فبدرت فشقت على أحد تلك الأفواه حتى كشفت بعض
 العظم فوجدته فاسدا قد تأكل واسودّ وتعفن وتثقب حتى نفذت
 الثقب الى المّخ فنشرت ما انكشف لى وتمكن من العظم الفاسد وأنا
 أظنّ أن ليس فى العظم غير ذلك الفساد الذى قطعت ونشرت¹³ وأنى
 90 قد استأصلته¹³ ثم جعلت أجبر الجرح بالأدوية الملحمة مدة أطول
 فلم يلتحم ثم عدت فكشفت عن العظم ثانية فوق الكشف الأول فوجدت
 الفساد متصلا بالعظم فنشرت ما ظهر لى أيضا من ذلك الفساد ثم
 رمت إجباره¹⁴ فلم ينجبر ولا التحم ثم كشفت¹⁵ عليه أيضا فلم أزل أقطع
 العظم جزءا جزءا وأروم جبره فلا ينجبر حتى قطعت من العظم نحو
 95 شبر وأخرجته بمّخه ثم جبرته بالأدوية فالتحم سريعا وبرئ، وإنما وجب
 هذا التكرار فى عمله وشقه لحالة ضعف العليل وقلة احتماله وخوفى
 عليه الموت لأنه كان يحدث له فى كلّ الأوقات من إفراط الاستفراغ
 غشى ردى فبرئ برّا تامّا ونبت فى موضع العظم لحم صلب وصلحت
 حاله فى جسمه وتراجعت قوته وتصرف فى أحواله ولم تتعرضه ففى
 100 المشى آفة¹⁶ تضرّ به¹⁶ البتّة،

13. P. وقلت لا استأصله. 14. BP. جبره. 15. V. كشفت. 16. BV,

M, om. cett. ضرته

Now in the case of a prominent bone that has been broken in any part of the body, it should be sawn off in this manner: you take a ligature and tie it to the extremity of the prominent bone and bid someone keep it stretched upward; then you put on another ligature of wool¹ thicker than the first, tying it to the tissue that is beneath the bone, and pull on the end so that the flesh is drawn down and you lay bare of flesh the spot where you intend to saw, so that the saw does not injure the flesh. You should place a block of wood or a board firmly beneath the bone; which done, there is no hindrance to the saw's cutting through the diseased bone. The saw-cut should be made a little above the site of the disease in case there should be disease in the cavity of the bone that is not apparent on the surface, which might compel you to carry out the sawing a second time. If the bone be diseased without any swelling, but it all seems the same from one part to another, and the disease be in the middle or in one segment of it, then expose it on all sides; put the block beneath, and saw it from the first side, where the disease is. When you have finished this, saw it from the other side. The saw-cut should be at a little distance from the diseased part, as we have already said.

If the disease be in one of the phalanges, amputate the diseased phalanx and saw through the bone where it is continuous on the other (healthy) side. If the disease be in the joint between two members, then there is nothing to be done but scraping. If the disease be in the carpus or tarsus it is a very difficult matter treating them; you must peel off the disease in whatever way seems possible, and scrape it away and clean up the part in

¹ For 'of wool', V reads 'above'.

to this chapter, III. 2). Then in Book III. 5 he illustrates an osteotome (fig. 192) for dealing with a splintered clavicle; another in III. 19 for the excision of an irreducible bone in a compound fracture; and in chapter 22 another is mentioned without figure for the removal of redundant callus or bone in a malformed healing fracture. Other classical forms of osteotome were: the *ἐκκοπεὺς τεταραγμένη* (Antyllus, in Oribasius XLIV. 22 and 23) for resecting a small bone; and the *γομφωτήρια ἐκκοπεύς* (also Antyllus, loc. cit.) for larger bones, the literal meaning being 'wedge-shaped'. This may have been a more

accurate name for the common chisel; but Albucasis does not seem to give anything quite corresponding with these last two.

Block. This is mentioned by Albucasis in his directions for the sawing-off of an exostosis. It corresponds with the *ἐπίκοπον* which, according to Paulus (VI. 67), was used by Leonides.

6. *Hammer*—*σφύρα*—is not mentioned at all here but later on in connexion with the use of the lenticular osteotome (III. 2).

7. *Drill.* This will be fully discussed under Book III, chapter 2.

فإن كان عظم نات في موضع من الجسم قد انكسر فينبغي أن
تنشره على هذه الصفة وهو أن تأخذ رباطا فتشده في طرف العظم
الناتى وتأمر من يمدّه الى فوق وتصير رباطا آخر من صوف¹⁷ أغلظ من
الرباط الأول ثم تربطه على اللحم الذى تحت العظم وتمدّ طرفه
لينجذب اللحم الى أسفل وأنت تكشف اللحم عن الموضع الذى تريد¹⁰⁵
نشره لئلا يؤذى المنشار اللحم وتضع خشبة او لوحا تحت العظم من
أسفل محكما لأنّه اذا فعلت ذلك لم يمتنع المنشار من قطع العظم
الفاسد ، وينبغي أن يكون النشر فوق موضع الفساد قليلا لئلا يكون
في تجويف العظم فساد فلا يظهر في ظاهره للحس فتضطر الى نشره
مرة أخرى، فإن كان العظم فاسدا ولم يكن ناتيا بل يتصل ببعضه¹¹⁰
ببعض والفساد في وسطه او في بعضه فاكشف اللحم من جميع جهاته
كلها ثم تضع الخشبة من أسفل ثم تنشره من الجهة الأولى حيث
الفساد^{19,18} فإذا فرغت من نشره فانشره¹⁹ من²⁰ الجهة الأخرى وليكن النشر
على بعد من الفساد¹⁸ قليلا على ما قلنا ،

فإن كان الفساد في مفصل قطعت المفصل الفاسد نفسه ونشرت¹¹⁵
العظم حيث²¹ يتصل من الجهة الأخرى ، فإن كان الفساد في اتصال
مفصلين فليس فيه حيلة غير الجرد ، فإن كان الفساد في مشط اليد
او مشط الرجل فالأمر في علاجه عسر جدا ولكن ينبغي أن تقشر²²
الفساد كيف²³ ما ظهر لك وتجرده وتنقيه على أى حال يمكنك وبأى

فإذا فرغت V, فإذا فرغت من نشره B, 19. 18. om. P. 17. فوق V. 20. فى S. 21. <لا> B. 22. P, M, تشق على 23. B, فكيف cett. M, تشق على 22. P.

whatever way you can and by whatever technique is convenient for you, so long as there is no vein or nerve in your way. .

Now you should know that there are a great number of cutting instruments and saws for cutting these bones, varying according to the different sites and arrangements of the bones; their thickness or thinness; their greatness or smallness; their hardness or sponginess; so you should have ready for every sort of operation an instrument suitable for that operation. You should know too that when you have long experience and knowledge of the branches of this art the operations themselves may well indicate the kind of instrument needed; for the man who is skilled in the art and has seen various kinds of disease may think out for himself which instrument is suitable for each disease. At the end of this chapter I give you illustrations of a number of instruments as types for you to copy and as a pattern upon which you can base others, God willing:

Saw¹ (fig. 159).

Another saw (fig. 160).²

¹ Later figures in M are either mutilated or missing; it is therefore difficult to fit the figures to the text. As with the list in II, 46, we have largely confined ourselves to the text of H.

² H has a marginal note: 'But there should be some white in the midst of the black so as to make it hollow, which I have carelessly omitted'.

١٢٠ حيلة تستقيم لك متى لم يعترضك عرق او عصب

واعلم أن المقاطع والمناشير لقطع هذه العظام كثيرة على حسب
 وضع العظام ونصبها ولفظها وورقتها وكبرها وصغرها وصلابتها وتخلخلها
 فلذلك ينبغي أن تعدّ لكل نوع من العمل آلة مشاكلة لذلك العمل
 واعلم أن الأعمال أنفُسها قد تدلّك على نوع الآلة التي تحتاج إليها
 اذا كانت معك دربة طويلة ومعرفة بفنون هذه الصناعة لأن من مهـر
 ١٢٥ الصناعة وشاهد ضرويا من الأمراض فقد يستبطل لنفسه ما يشاكله من
 الآلات لكل مرض وأنا مصوّر لك في آخر هذا الباب عدّة آلات
 تجعلها أثقل تحتذى عليها وقياسا تقيس بها على غيرها إن شا
 الـ

١٣٠ صورة منشار:

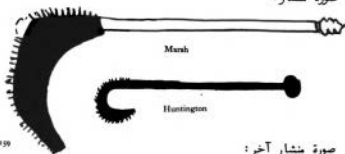


Fig. 159

صورة منشار آخر:

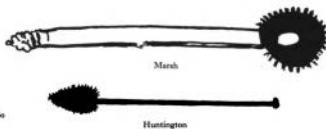


Fig. 160

A small saw (fig. 161).
A large saw (fig. 162).

صورة منشار صغير:



Marsh

Fig. 161



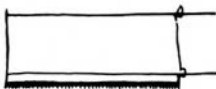
Huntington

صورة منشار كبير:



Marsh

Fig. 162



Huntington

Scraper (fig. 163); the head of this scraper should resemble the head of a nail, stellate, engraved like a file. What it is suitable for is to scrape the diseased heads of joints, or big broad bones.

Another scraper, small (fig. 164).



Fig. 163



135 يكون رأس هذا الجرد على هيئة رأس السمار مكوكيا ونقشه
على هيئة نقش الإسكفاج وإنما يصلح أن تحك به رؤوس الغاصل اذا
نسدت او عظماء واسعا كبيرا ،
صورة جرد آخر صغير :



Fig. 164

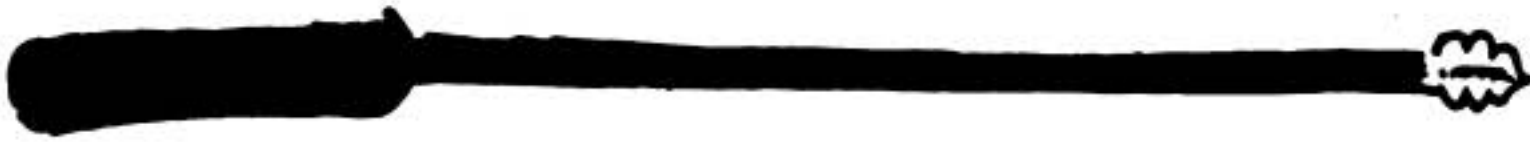
Broad scraper (fig. 165).

Firm (bow) saw (fig. 166). The upper bow and the blade are made of iron, the handle of box-wood, turned and firmly fixed.

Scraper with concavity (fig. 167).

Another scraper, fine (fig. 168).

صورة مجرد عريض:



Marsh



Huntington

Fig. 165

صورة منشار آخر محكم:

140



Marsh

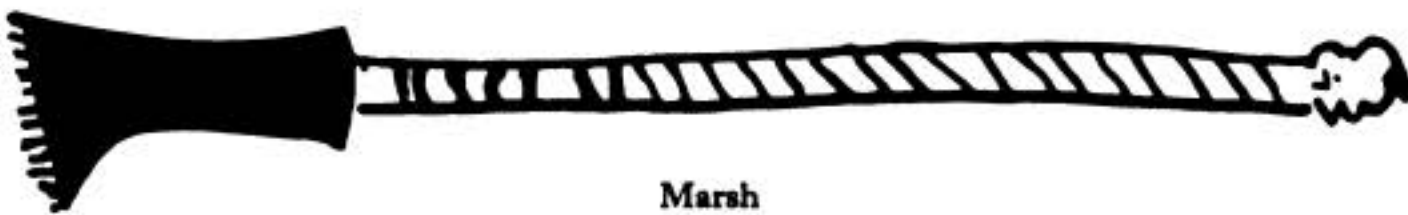


Huntington

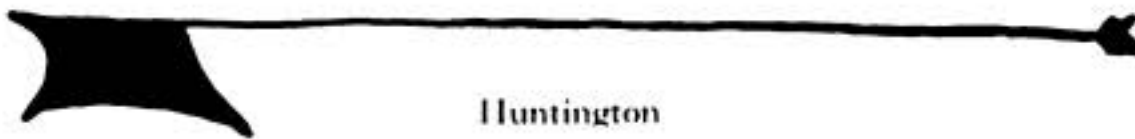
Fig. 166

يصنع قوسه الأعلى وشفرته من حديد ونصابه من عود بقس مخروط محكم،

صورة مجرد فيه تجويف:



Marsh



Huntington

Fig. 167

صورة مجرد آخر لطيف:



Huntington

Fig. 168

Scraper (fig. 169).

Another scraper, with bent extremity (fig. 170).

Small scraper resembling a probe (fig. 171).

Osteotome (fig. 172).

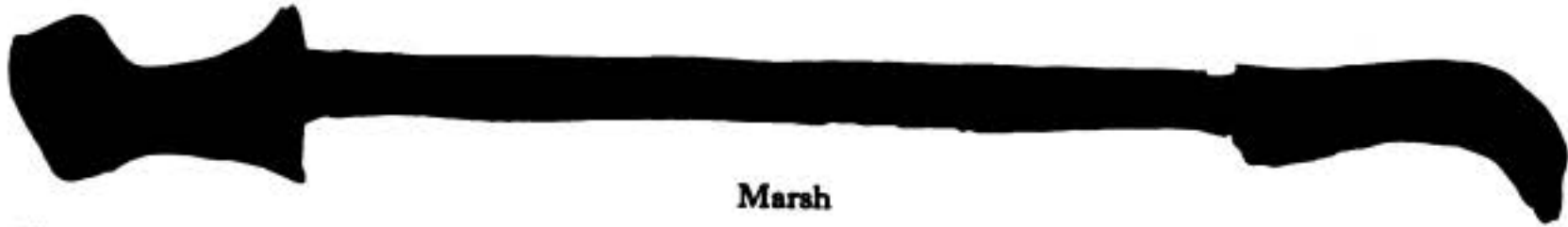


Fig. 169

صورة مجرد آخر معقف الطرف :

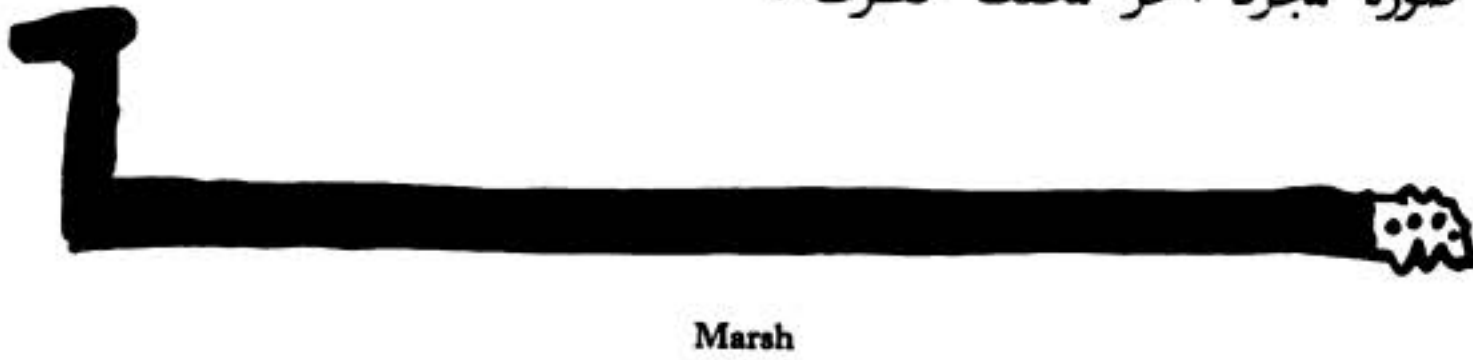
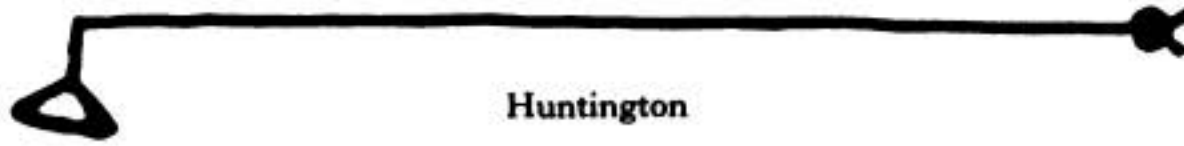


Fig. 170



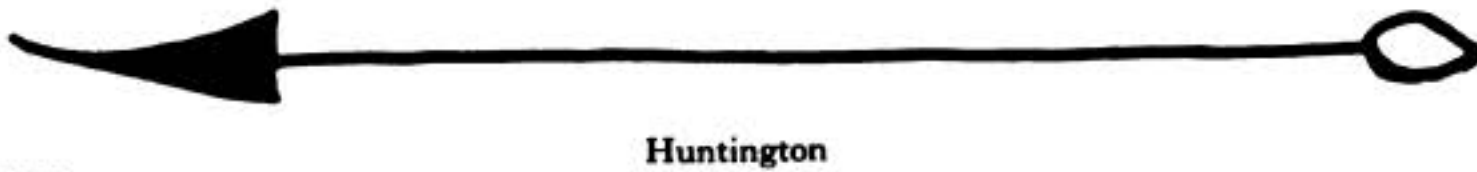
صورة مجرد صغير يشبه المسبار :



Fig. 171



Fig. 172



صورة مقطع آخر صغير :



Fig. 173

Huntington

Another osteotome, small (fig. 173).

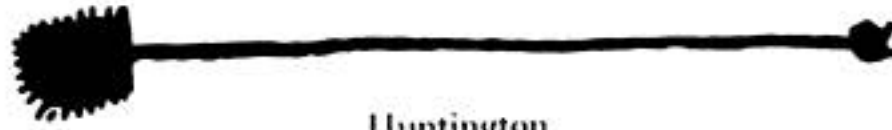
Another scraper. Its extremity is like a probe, and it is handy in many places for scraping bone (fig. 174).

A scraper suitable for perforated bone (fig. 175). Its extremity is triangular, with sharp edges. It is made of Indian iron, as should be all the scrapers and cutting instruments we have mentioned.

صورة مجرد أيضا :



Marsh



Huntington

Fig. 174

150 طرفه كالمرود يتصرف فى مواضع كثيرة من جرد العظام،

صورة مجرد يصلح لجرد ما انثقب من العظام :



Marsh

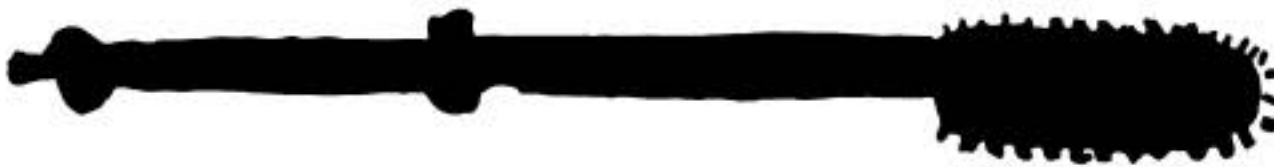


Huntington

Fig. 175

طرفه مثلث حاد الحواشى يصنع من حديد هندى وكذلك ينبغى
أن تصنع جميع ما ذكرنا من المجارد والمقاطع،

صورة مجرد :



Marsh

Fig. 175A

CHAPTER EIGHTY-SEVEN. On the amputation of limbs and the sawing-off of bones.

Sometimes the extremities become gangrenous, either from an external or an internal cause. Now when you have treated this disease by medical means, ineffectively, and you see that the disease is spreading over the limb and nothing will stop it, you must cut off that limb as far as the disease has spread, so that the patient may escape death or great affliction, greater than the loss of the limb.

Now the sign of the victim of this state is that the limb goes black, so that you might think it were burnt with fire, or, after the blackening, it putrefies, and the putrefaction spreads to parts adjacent to that limb and begins to attack the whole body; cut it away as soon as you can. So must you do if the disease is caused by the bite of some dangerous reptile such as the marine scorpion, viper, or venomous spider, and so on. If the disease or bite be at the tip of the finger, cut off the finger, giving the disease no opportunity to spread to the rest of the hand. Similarly, if it attacks the hand, cut it off at the wrist, giving the disease no opportunity to spread and attack the two bones of the forearm. Similarly, if it attacks the forearm, cut it off at the elbow through the joint itself. If the disease passes onward and you perceive that it has reached the region of the shoulder, by no means cut the shoulder, for that will be the death of the patient; use any treatment but that, as best you may. In the same manner act in regard to the foot when the disease attacks a toe; namely, amputate the toe through one of the interphalangeal joints. If the disease attacks the tarsus then amputate the whole foot; and if it ascends toward the knee, amputate the leg at the knee-joint. If it be that the disease has passed on above the

BOOK TWO. CHAPTER EIGHTY-SEVEN

Amputation is written of by Archigenes (quoted by Oribasius XLVII. 13) with similar directions. This chapter mentions the same instruments as those already illustrated in the previous chapter. The latter part of the chapter is enlivened with another clinical case from the author's private practice to

show the value of prompt attention and amputation in gangrenous cases. The value and interest of this case is heightened by its being told as an error of judgement on his own part. The subject of amputation has already been considered (see previous chapter) as part of bone surgery in general.

الفصل السابع والثمانون فى قطع الأطراف ونشر العظام

قد تعفن الأطراف إمّا من سبب من خارج وإمّا من سبب من داخل فإذا عالج ذلك الفساد بعلاج الأدوية ولم ينجع العلاج ورأيت الفساد يسعى فى العضو لا يردعه شئ¹ فينبغى أن تقطع ذلك العضو الى حيث بلغ الفساد لينجو العليل بذلك من الموت او من بلا² عظيم هو أعظم من فقد العضو،

وعلاوة من عرض له ذلك أن يسود العضو حتى تظن أن النار أحرقتة او يعفن بعد السواد حتى يسعى ذلك العفن الى ما يلى ذلك العضو ويأخذ فى جملة البدن فبادر بقطعه، وكذلك إن كان سبب الفساد عن لسع بعض الهوام كعقرب البحر او الأفعى او الرتيلا³ ونحو ذلك، فإن كان الفساد او اللسعة فى طرف الأصبع فاقطع الأصبع ولا تمهل الفساد أن يسعى² الى اليد³ وكذلك إن كان أخذ فى اليد فاقطعها من أصل الزند ولا تمهل الفساد أن يسعى³ حتى يأخذ فى زندى الذراع وكذلك إن أخذ فى الذراع فاقطع الذراع عند المرفق فى المفصل نفسه، فإن جاز الفساد ورأيته أخذ الى نحو المنكب⁴ فلا تقطع المنكب البتة⁴ فإن فى ذلك موت العليل واستعمل غير ذلك من العلاج على قدر الطاقة، وكذلك تفعل بالرجل اذا أخذ الفساد فى الأصبع فاقطع الأصبع عند أحد السلاميات، وإن أخذ فى مشط الرجل فاقطع الرجل بأسرها فإن صعد الى الركبة فاقطع الساق عند مفصل الركبة، وإن كان الفساد قد بلغ فوق

1. P. و 2. M, فى اليد B, لليد V, om. cett. 3. BV, om. cett.

4. M, V, البتة B, فلا نقطع المنكب V, البتة 4. M, om. cett.

knee, there is nothing of any avail in this case but to leave it, and for the patient to resign himself to death.

Now the way to amputate or saw off a limb is to bind a ligature round below the site and another above; an assistant draws the one downward and another assistant draws the upper ligature upward; while you dissect away the tissues between the two ligatures with a broad scalpel until it is laid bare of flesh; then it should be cut or sawn. You must place linen dressings on every side lest the saw touch a part that is sound and thus cause the patient additional pain and inflammation. If a haemorrhage occurs while you are operating, cauterize the place as quickly as possible, or apply to it one or other of the styptic powders; then continue until finished. Then bind up the mutilated limb with a suitable bandage and dress until healed.

Now I shall relate to you an example; what I am going to tell you is exactly what happened to a certain man's foot. He had a blackening of the foot, with a burning like that of fire. The disease, to begin with, was in one toe, but it went on to involve the whole foot. When the man saw the disease spreading in the limb and felt the violent pain and burning, he hastened of his own accord to amputate it at the joint, and he got better. After a long time had passed the very same kind of disease arose in the forefinger of his hand. He came to me, and I attempted to suppress the superfluity with remedies that I applied to the hand, after purging his body; but the superfluity was not to be suppressed and began to spread to the second finger, and eventually the whole hand was involved in the disease. He urged me to cut off his hand, but I did not wish to do this, hoping I should be able to overcome the superfluity, and also fearing he would die at the amputation of his hand, for the man's strength was on the decline.

الركبة فليس فيه حيلة إلا تركه وإسلام العليل الى الموت،

وصفة قطع العضو او نشره أن تشدّ رباطا في أسفل الموضوع

الذى تريد قطعه وتشدّ رباطا آخر فوق الموضوع ويمتّ خادم الرباط الواحد الى أسفل ويمتّ خادم آخر الرباط الأعلى الى فوق وتجسّد

35 أنت اللحم بين الرباطين بموضع عريض حتى ينكتف اللحم كله نسّم

يقطع او ينشره وينبغي أن تضع من جميع الجهات خرق الكتان لغلا يسّ النشر الموضوع الصحيح فيعرض للعليل ألم زائد وورم

حارّ، فإن حدث نزف دم في خلال عملك فاكو الموضوع بسرعة او

احمل عليه بعض الذرورات القاطعة للدم ثم عد الى علاجك حتّى
30 تغرغ ثم اربط العضو المجرّح برباط يصلح له وعالجه حتى يبرأ،

وأنا أخبرك بمثال عرض لرجل في رجله هذا المعارض بعينه

الذى أصف لك وذلك أنه حدث في رجله سواد مع حرقة تشبه النار وكان ذلك الفساد أوّل ما حدث في أصبعه حتى أخذ الرجل كلها

فبدر الرجل من ذاته لما رأى الفساد يسمى في العضو مع شدّة ما
35 كان يجد من الوجع والحرقة فقطعه عند المفصل فيبرئ، فلما مضى

له زمان طويل عرض له ذلك الفساد بعينه في أصبع يده السّبابية فقصدني فرمت ردع ذلك الفضل بما حملت على اليد من الأديسة

بعد تنظيفي ليدنه فلم يرتدع الفضل وجعل يسمى في الأصبع الآخر حتى أخذ الفساد في اليد فدعاني الى قطع يده فأبيت عليه رجاء

40 متى على إرداع ذلك الفضل وخشيت أيضا عليه عند قطع يده الموت

When he despaired of me he went back to his own country, and I then heard that he had gone and cut off his whole hand, and got well. I narrate this story as help against this kind of malady when it occurs; and as guidance for you to take and act upon.

لأنّ قوّة الرجل كانت على السقوط، فلمّا يئس منّي انصرف الى بلده
فبلغنى عنه أنّه بدر فقطع يده بأسرها فبرئ، وإنّما حكيتُ هذه
الحكاية لتكون عونا على ما يقع من جنس هذا المرض ولتكون دليلا
يستدلّ به ويعمل عليه،

6. جلبت B, V s. p.

CHAPTER EIGHTY-EIGHT. On the treatment of sinuses and the way to irrigate them.

When an abscess occurs in any of the fleshy parts and becomes chronic and eventually collects pus, and then it breaks open or is perforated, and all the contained matter comes out and the site is left hollow, like a vessel, and the overlying skin thinned like a rag, but the suppuration has not gone so far as to involve bone or tendon or ligament—and hence it merits the name of ‘sinus’ and is not called a fistula. But if it goes on until the disease involves any of these parts it is then called a fistula or defluxion.

The treatment of it will be to cut away all that skin with a circular incision; specially if it be thinned and has become like a rag, and you are sure that it will not adhere to the place, because of its corruption. But if you are in hope of its adhering, and the corruption has not reached that point, and there is in the skin some thickness of flesh, then treat it by irrigation. The procedure is that you examine the sinus, and if it be large and the purulent discharge from it smell bad, then irrigate it with Egyptian medicine, which is vinegar, oil,¹ honey and verdigris, equal parts of each, mixed in a vessel and heated on the fire until the compound thickens² and assumes the consistency of honey. Then take as much as you need and dilute it with water and honey, and with this irrigate the sinus and bind up the opening, leaving the compound inside for two hours. Then get it out by pressure. Do this for several days until the sinus is clean and the smell disappears. It may be irrigated with water of ashes if the medicine is not at hand. For that, you take ashes of vine or of oak, and put water upon them; then clarify the liquor and with it irrigate the sinus until you are sure it is

¹ PV omit the oil.

² So B. H ‘solidifies’, cett. ‘goes red’.

BOOK TWO. CHAPTER EIGHTY-EIGHT

The irrigation of sinuses calls for the use of the same clyster (*miḥqan*) as for giving enemata in chapter 83. The general principles of this chapter follow Paulus (iv. 48).

الفصل الثامن والثمانون فى علاج المخايب وكيفية حقنها بالأدوية
 اذا حدث ورم فى بعض الأعضاء اللحمية وطالت مدة الورم حتى
 جمع مدة ثم انفجر او بط وخرج جميع ما كان فيه من المدة وبقي
 الموضع فارغا كأنه وعاء والجلد الذى عليه كالخرقة قد رق ولم يكن
 5 بالغ فى فساده أن أثر فى عظم ولا فى عصب ولا فى رباط² ومن هنا¹
 استحق أن يسمى مخبأ ولم يسم ناصورا إلا أن تطول مدته حتى يؤثر
 الفساد فى شئ من هذه الأعضاء فحينئذ يسمى ناصورا او زكاما ،
 وعلاجه أن تقطع ذلك الجلد كله كما يدور ولا سيما اذا كان قد
 رق وصار كالخرقة وتيقنت أنه لا يلصق بالموضع لفساده فإن رجوت أن
 10 يلصق الجلد ولم يكن بلغ منه الفساد ذلك المبلغ وكان فى الجلد
 ثخن من اللحم فعالجه بالحقنة ، وهو أن تنظر الى المخبأ فإن كان
 كبيرا والقيح الذى يمد منه متن الرائحة فاحقنه بالدواء المصرى الذى
 هو خل وزيت وعسل وزنجار أجزاء سواء تجمع فى إناء وتطبخ على النار
 حتى يخثر الدواء ويأتى فى ثخن العسل ، ثم تأخذ منه حاجتك
 15 وترققه بالماء والعسل وتحقن به المخبأ وتشد فمه وتترك الدواء فيه قدر
 ساعتين ثم تخرجه بالعصر تفعل ذلك آياما حتى ينقى المخبأ ويذهب
 النتن ، وقد يحقن بما الرماد اذا لم يحضر هذا الدواء ، وهو أن
 تأخذ رماد حطب الكرم او رماد حطب البلوط والى عليه الماء ثم صفه
 واحقن به حتى تتيقن أن المخبأ قد انغسل ، فإن لم يكن فى

? وتخبأ M. an leg. ولهذا B, ومن هذا P, من سا. 2. BHP. تجمع 1.

3. om. PV. 4. B, H, محمد cett. تحمر.

thoroughly clean. But if the patient cannot tolerate the Egyptian medicine nor the water of ashes, then irrigate him with water and honey with which a little pounded verdigris has been mixed; or irrigate with honey and wine mingled; the value of the honey lies in its cleansing and washing, while the wine closes up the sinus, specially if it be a wine which has some dryness and astringency. When you have done this several times and you are sure that the sinus is clean of diseased matter, then irrigate it with those compounds that will encourage granulation in it. For example, you may take a little Palm ointment and dissolve it in oil of roses and some astringent wine; or irrigate it with some of the other ointments and medicines whose prescriptions we have recorded in the treatise on ointments. If the opening of the sinus be too narrow for the nozzle of the syringe, open it up slightly with the knife, or put in it a pad steeped in Egyptian ointment or vermilion ointment, until it is dilated. On the other hand, if the opening be wide, bring the edges together with a suture, and leave of it sufficient width that the syringe may be only just introduced. In the same way, if the opening from which the discharge flows be raised up, then incise it at its lowest part so that the discharge may flow downward out of it; for when the discharge collects at the bottom of the sinus it prevents the formation of flesh in it. If you cannot open it up as you wish at the lower point, then try to set the part in whatever position you conveniently can to facilitate the discharge of pus, and try to ensure that no pus is held up in it.

As for the consolidating medicaments that are applied externally to the sinus, and the manner of their application: you take one of the ointments suited to your purpose, and spread it on a piece of lint of sufficient size to cover the whole sinus; then with scissors cut a hole in the lint over the mouth of the sinus and a little wider than the sinus opening; then spread

20 العليل احتمال على الدواء المصري ولا ماء الرماد فاحقه بماه وعسل قد خلط فيه شيء من الزنجار المسحوق او تحقه بالمسل والشراب منزجين لأن من شأن المسهل أن يتقى ويغسل والشراب يلزق المخيا ولا سيما اذا كان الشراب فيه فضل قبض ويسه فاذا فعلت ذلك مرّات وتيقنت أن المخيا قد ذهب فساداه فاحقه بما ينبت اللحم فيه 25 مثل أن تأخذ من المرمم النخل وتحمه بدهن ورد وشراب قابض او تحقه ببعض الأدوية والمراهم الأخر التي أثبتا صفاتها في مقالة المراهم، فإن كان فم المخيا ضيقا لا يسع فيه أنبوب المحقن فوسمه بالحديد قليلا او ضع فيه قليلا ملوثا في المرمم المصري او مرمم السريقون حتى يتسع وكذلك إن كان الفم ايضا واسعا فاجمع شفتيه بالخياطة واترك منه على قدر ما يدخل فيه المحقن بلا مزيد وكذلك إن كان فمه الذي يسيل منه القيح مرتعنا الى فوق فشقه في أخفض مكان فيه ليسيل منه القيح الى أسفل لأن القيح اذا احتقن في غور المخيا منع اللحم أن ينبت فيه فإن لم يمكنك شق المخيا نحو أسفله على ما تريد فم أن تنصب المضو نصبة يسيل القيح منه بسهولة على 35 حسب ما يتهيأ لك ورم أن لا يحتبس فيه شيء من القيح البتة، وأما الأدوية الملحمة التي توضع على المخيا من خارج وكيفية وضعها عليه فهو أن تأخذ من أحد المراهم الملحمة⁸ المشكلة لسما تريد وتده على خرقه كان ولكن الخرقه قدر ما يغم بها المخيا كله ثم تعرض بالمقّص قبالة فم المخيا ثقبه أوسع من فم المخيا قليلا ثم

5. M. وتجبله. 6. M. السلعون. 7. M. وتأخذ. 8. om. AHP.

on another piece of lint a quantity of softening ointment proportionate to the opening and put the one on the other so that it stands away from the opening of the sinus, in order to ease the discharge of pus from it; and do not remove the larger dressing until after many days. But the dressing over the sinus opening you may constantly remove, so that the pus collected behind it may come out and so that you may know whether there be much or little ichor, and whether digested or not. And at the same time investigate the site of the sinus itself to see whether the patient feels any pain in it or no pain, and whether there be any swelling in it or not. Then when your treatment has reached such a point that you see that there is only a little superficial matter coming out round the mouth of the sinus, you may know that the sinus has closed up or is near to closing up. Then you may unbandage it the next day or the third day, and when the wound is unbandaged make a change of dressing and ointment. But if, after a long while, the sinus discharges a thin ichor, do not despair of its closing up, for its healing is near. For there are some men whose wounds are slow in healing, and some are the opposite.

If, after many days, undigested pus is discharged you may know that the sinus has not closed. If the closing of the sinus be delayed and it be a long affair, make the medicines dryer; let them be medicines that have some humidity in their substance but dryness in their potency, such as Palm ointment with the addition of excess of rock-alum. A most efficacious treatment is to take Palm ointment and dissolve it in oil of roses and sprinkle over it old wine of even consistency. Then knead together, and use that. The same sort of thing may be done with honey if you have no

٤٥ تمدّ من المراهم اللينة على خرقة أخرى على قدر الثقب وتضعها^٩
 عليها^{١٠} وضعا متباعدة عن فم المخبأ ليسهل خروج القيح منه ولا تنزيل
 الخرقة الكبيرة إلا بعد^{١١} "أيام عدّة" وأما التي على فم المخبأ فهي التي
 تنزلها في كلّ وقت ليخرج ما اجتمع فيه من القيح ولتعرف ما يسيل
 منه من الصديد هل هو كثير أو قليل أو نضيج أو غير نضيج ، ومع
 ٤٥ هذا أيضا فتفقد موضع المخبأ نفسه هل يحس صاحبه فيه بوجع أم
 ليس فيه وجع وهل فيه ورم أو ليس فيه ورم ، فإذا تمادى علاجك
 هكذا ورأيت المادّة التي تخرج يسيرة على فم المخبأ فاعلم أنّ المخبأ
 قد التصق أو قارب الالتصاق فحينئذ فحلّه من غد أو في اليوم الثالث
 ومتى حلت الجرح فابدل الخرق بغيرها وجدد المرهم ، فإن خرج
 ٥٥ من المخبأ بعد مدّة طويلة صديد رقيق فلا تيأس من التزاقه فبرءه
 قريب لأنّ من الناس من يبطئ نبات اللحم في جراحته ومنهم بضدّ
 ذلك ،

فإن خرج من المخبأ بعد أيام كثيرة قيح غير نضيج فاعلم أنّ
 المخبأ لم يلتزق فإن أبطأ التزاق المخبأ وطال أمره فزد في تجفيف
 ٥٥ الأدوية ولتكن أدوية تكون في قوامها رطوبة وفي قوتها يابسة مثل
 المرهم النخلّي إذا كان قد زيد فيه فضل زيادة من القلقطار ، ومن
 أبلغ ما يعالج به أن يؤخذ المرهم النخلّي ويحلّ بدهن ورد ويرش
 عليه الشراب العتيق المعتدل في قوامه ثمّ تعجنه به وتستعمله ، وقد
 يفعل مثل هذا الفعل إذا لم يحضرك المرهم النخلّي العسل إذا

M, ثلاثة ايام , P ايام ومدّه , H, 11. cett. عليه , M, 10. codd. وتضعه . 9.

cett. ثلاثة ايام مرة

Palm ointment at hand; if you heat the honey to a thick consistency and use that; or take myrrh and aloes and incense of juniper and beat them all up together and sprinkle on the honey while it is heating on the fire, spread on lint and bind over the sinus; or spread on it honey heated to a thickness, and over that sprinkle powdered aromatic roots, and over these place a dressing that you bandage on. Sometimes also in a case of this sort long birthwort and the root of the blue iris and vetch flour and centaury are usable, either separately or mixed, beaten up together, sifted and scattered into honey as I described; use them thus.

But if the sinus be chronic, and it does not heal with this treatment, then you may know that there is corruption at the bottom of it, which has affected the bones or motor nerves or ligaments; the treatment then is that of fistula as already given.

60 طبخته حتى يغلي واستعملته او تأخذ من المرّ والصبر والكدر وتسحق
الجميع وتذره على العسل وهو على النار ثم تطليه على خرقة وتشده
على المخبأ او يطلى بالعسل الذي طبخته حتى يغلي وتذره عليه
العقاقير وتضع عليه الخرق وتشده، وقد يستعمل في مثل ذلك
الزراوند الطويل وأصل السوسن الأسمانجونى ودقيق الكرستة والقنطريون
65 مفردة استعملتها او مجموعة تسحقها وتنخلها وتذرها على العسل
الذى وصفت وتستعمله،

فإن طال أمر المخبأ ولم يبرأ بهذا العلاج فاعلم أن في غوره
فسادا وقد أثر في العظام او في سائر الأعصاب الصلبة او الرباطات
فعالجه علاج الناصور على ما تقدم،

CHAPTER EIGHTY-NINE. On the treatment of paronychia and broken nails; and on the amputation of a superfluous finger; and the separation of webbed fingers.

Paronychia is a growth of flesh under the nail of the thumb or big toe; it may also occur in the other fingers and toes. When it is chronic and the treatment of it is neglected, it comes up as an abscess, or corrupts and generates pus until it eats away the root of the nail. Often it rots it entirely, and often the disease reaches the bone and gives rise to foetor and broadens the tip of the finger and makes it livid in colour. When you have treated it with those means mentioned in their place, and your treatment is ineffective, you must excise all the superfluous growth from the nail and then cauterize the wound, for in this case cauterization is a great help. But if the bone be healthy and the nail also healthy, and the in-turned angle of the nail has pressed the flesh inwards and begun to stab it and injure it, you should pass a thin probe beneath the corner of the nail that presses into the flesh, and raise it up and carefully cut away that flesh and apply caustic to the remainder, until it is all gone; then dress with ointments until cured. But if it should be that the disease has already begun to involve bone, that bone should be excised and removed; for it will never heal while there remains any diseased bone. And if you see the corrosion and corruption spreading in the finger, amputate it at one of the joints, as has been previously mentioned; then dress it until it is healed.

If a laceration or bruising happen to the nail, with violent pain, you

BOOK TWO. CHAPTER EIGHTY-NINE

The disorder dealt with here, paronychia, must surely be whitlow in various forms. This is drawn, with other complaints in this chapter, from Paulus (vi. 85 and 86).

الفصل التاسع والثمانون فى علاج الداحس والظفر المروض وقطع
الأصبع الزائدة وشق التحام الأصابع

الداحس هو لحم كثير ينبت تحت ظفر إبهام اليد أو الرجل
وربما ينبت فى سائر الأصابع، فإذا طال أمره وأهمل علاجه تورم وربما
5 حارًا أو فسد وقاح حتى يأكل أصل الظفر وربما أفسده كله وربما بلغ
الفساد الى العظم حتى يكون له رائحة منتنة ويصير طرف الأصبع عريضا
ويكون لونه كمدا، فإذا عالجته بما ذكرنا فى التقسيم ولم ينجع علاجك
فينبغى أن تقطع بالحديد جميع الفضلة التى تنبت¹ من الظفر ثم تكوى
الجرح بعد ذلك فإن الكوى فى هذا نافع جدًا، وأما إن كان
10 العظم صحيحاً² وكان الظفر أيضاً صحيحاً³ وكانت الزاوية³ الحاوية⁴ من
الظفر قد زمت اللحم الى داخل وجعلت تنخسه وتؤذيه فينبغى أن
تضع مرودا رقيقاً تحت زاوية الظفر الذى ينخس اللحم وترفعه الى فوق
وتقطع ذلك اللحم برفق وتضع على ما بقى من اللحم من الأدوية
المحرقة الأكلة حتى يذهب جميعه ثم تعالجه بالمراهم حتى يبرأ،
15 وأما إن كان الفساد قد أثر فى العظم فينبغى أن تقطع ذلك
العظم وتخرجه فإنه لا يبرأ ما دام فيه عظم فاسد البتة، فإن رأيت
التآكل والفساد يسعى فى الأصبع فاقطعها فى أحد السلاميات على ما
تقدم ذكره ثم عالجها حتى تبرأ،
فإن أصاب الظفر ضربة أو رضى وحدث فيه وجع شديد فينبغى

1. AB, V s. p. بقيت. 2. om. AM. 3. B, الوليد. 4. V, الراند.

4. V, الحلاه. M, الحاله.

should first bleed the patient and then cut away the nail with a sharp scalpel, a swerving cut from top to bottom. But be careful not to cut into the nail-bed, for you will give the patient violent pain and it will cause a growth of superfluous flesh at the place. Then dress the part with sedative dressings.

A superfluous finger growing on the hands of some men sometimes is all flesh, sometimes contains a bone, sometimes has a nail. Some of them arise at the root of a finger, or on one of the phalanges of a finger, and the latter do not move, while those that arise from the root of a finger do sometimes move. That which is purely fleshy is easily removed; you cut it off at the root with a broad scalpel. But the treatment of that which arises at the root of a finger is difficult; you should avoid amputating. In the case of one growing from the finger at a phalangeal joint, you should first cut through the flesh down to the bone with a circular incision; then saw the bone through, with one of the saws that suit the purpose; then dress it until it heals.

As for webbing of the fingers one to another, that occurs very frequently. It may be either congenital or from the healing of a wound or burn or the like. You have to cut the web away until the fingers are brought back to their original form; then interpose between them a pad or piece of material soaked in oil of roses, to prevent them from rapidly joining together and to keep them apart; or you can put between them a thin sheet of lead until the healing takes place as it should. Similarly, if one of the fingers becomes joined to the palm of the hand, cut through the adhesion according to the form it takes, and with proper regard for the shape of the member.

20 أن تغصد العليل أولاً ثم تشق الظفر بموضع حاتم شقاً منحرفاً من فوق الى أسفل وتحفظ من أن تبلغ بالشق الى اللحم الذي تحت الظفر فإنك تحدث بذلك على العليل وجماً شديداً ويكون سبباً لنبات لحم زائد في الموضع ثم علاج الموضع بما يسكن الأوجاع،

وأما الأصبع الزائدة التي تتولد في بعض أيدي الناس فربما كانت لحمية كلها وربما كانت في بعضها عظام وربما كان فيها ظفر ويسكون نبات بعضها في أصل مفصل بعض الأصابع أو يكون نباتها في بعض سلاميات الأصبع والتي تثبت في بعض سلاميات الأصبع لا تتحرك والتي تثبت عند مفصل الأصبع ربما تحركت فما كان منها لحمياً فقطعه بسهولة وذلك أن تقطعه عند أصله بموضع عريض وأما التي نباتها في أصل المفصل فعلاجها عسر فتتجنب عن قطعها، وأما التي تثبت في الأصبع عند أحد السلاميات فينبغي أن تقطع أولاً لحمها قطعاً مستديراً الى العظم ثم تنشر العظم بأحد تلك المناشير الموافقة لذلك ثم عالجه حتى يبرأ،

وأما الالتحام الذي يعرض للأصابع بعضها ببعض فكثيراً ما يعرض 35 ذلك ويكون ذلك مما يولد به الإنسان ويكون عند اندمال جرح أو حرق نار ونحو ذلك فينبغي أن تشق ذلك الالتحام حتى تسترجع الأصابع على هيئتها الطبيعية ثم تضع بينها فتلاً أو خرقاً مشربة في دهن الورد لئلا يلتحم سريعاً وتغرق بينهما أو تجعل بينهما صفيحة رصاص رقيقة حتى يندمل الموضع على ما ينبغي، وكذلك إن عرض 40 الالتحام لبعض الأصابع بالكف فشق ذلك الالتحام على حسب ما يتيسر ويصلح به شكل المضمرة،

5. om. A.

CHAPTER NINETY. On cutting for varices.

Varices are thick twisted veins filled with melancholic superfluities. They occur in most parts of the body, but generally in the legs, particularly in the legs of couriers and ploughmen and porters. First you must purge the body free from black bile, several times, strongly. Then venesect the patient in the basilic vein. The treatment with the knife is of two kinds: one is to incise and bring out all the black blood, the other is to draw out the vein and extract it bodily.

The incision is done thus: the leg is first well fomented with hot water to liquefy the thick foul blood; then bind up the patient's leg well from the upper part of his thigh to below the knee; then make an ample incision into the vein in one, two, or three places. Then with your hand press the black blood upward from the lower part and downward from the upper part of the leg and draw off as much blood as you see suffices or as the patient's strength can bear. Then bind up, and bid him abstain from foods that give rise to black bile. The evacuation and venesection should be repeated whenever the veins fill up again to the patient's hurt.

Extraction is carried out in this way: the patient's leg is shaved if it is very hairy; then bring him to the bath and foment the leg in hot water until it becomes red and the veins are filled. Or if there be no bath available let him take violent exercise until the limb gets hot. Then make a longitudinal incision in the skin over the vein, either at the upper end of it near

BOOK TWO. CHAPTER NINETY

The treatment of varices employed for their extraction a hook (fig. 176) that is evidently the same as that mentioned by Galen (*Medicus* 19) and Oribasius (xlv. 18). The Greek authors describe it as like the Greek gamma and with a gentle curve, and term it *κιρσουλκός*. The purpose of the instrument was to draw the skin up over the varix and at the same time make a longitudinal slit in the skin. The word used here for extractor is *nashl* which means, as has already been shown, a meat skewer or hook. This, although a very domestic word, seems exactly

to describe the classical *κιρσουλκός*. See also chapter 46. Then, while the skin edges were held apart and the vein exposed, it was lifted up with the *τυφλάγκιστρα*, also called *ἀγκιστρα ἑπακμα*, that is blunt hooks. These last are the same as the hooks illustrated by Albucasis next (fig. 177). The whole of this description of the operation is taken from Oribasius or Paulus (vi. 82) except that Albucasis seems to propose a prior measure, namely, simple incision and withdrawal of the stagnating blood, for which no special instruments were needed.

الفصل التسعون فى قطع الدوالى

الدوالى هى عروق ملتوية غلاظ مطوّية فضولا سوداوية تحدث فى
أكثر أعضاء الجسم وأكثر حدوثها فى الساقين ولا سيما فى سوق
الفيج¹ والأكارين والحمالين، فينبغى أولا أن تستعمل نفخ البدن
5 من المرأة السوداء مرّات نفضا قويا ثم افصد صاحبها الباسليق، وأما
علاجها بالحديد فيكون على ضربين أحدهما أن يشق ويخرج الدم
الأسود والوجه الآخر أن يسّل العرق ويخرج بأسره،

فأما شقه فعلى هذه الصفة تنطل الساق أولا بالماء الحارّ نعما
حتى ينحلّ الدم الغليظ العكر ثم تشدّ ساق العليل من فوق فخذيه
10 الى أسفل ركبته بعمامة ثم تشقّ العرق فى موضع واحد او فى موضعين
او فى ثلاثة شقا واسعا ثم تسلت الدم الأسود بيدك من أسفل
الساق الى فوق ومن فوق الى أسفل حتى تخرج من الدم القدر
الذى تراه كافيا² او ما تحتل قوة العليل ثم تربطه وتأمّره باجتناّب
الأغذية المولدة للمرأة السوداء ويعاد الاستفراغ والفصد متى امتلأت
15 العروق وأضرّ ذلك بالعليل،

وأما سلّه فيكون على هذه الصفة تحلق ساق العليل إن كان
فيه شعر كثير ثم تدخله الحمام وتنطل ساقه بالماء الحارّ حتى تحمرّ
وتدرّ العرق او يرتاض رياضة قويّة إن لم يحضره حمام³ حتى يسخن
العضو، ثم تشقّ الجلد قبالة العرق شقا بالطول إمّا فى آخره عند

M. <او ما حار>. 3. P. كما قلنا، V. الكفاية. 2. cett. الشيوخ، MV. 1.

the knee or at the lower end near the ankle. Then with hooks open up the skin and dissect away round the vein on each side until it is laid open to view. When it is visible you will see it red almost to the point of blackness; and when it is freed from the skin you will see it look like a cord. Then pass beneath it a probe to lift it up, and when it is clear of the skin hold it with a blunt smooth hook. Then make another incision near by, three fingers distant; then dissect away the overlying skin until it comes to view; then raise it with a probe as before and lift it with a second hook as you did at first. Then make yet another incision or several if need be; then draw out the vessel at the lowest incision near the ankle and cut it through. Then pull it and draw it out until it emerges from the second incision. Then draw it towards the incision above that and so on until you draw it out of the third incision (or) the uppermost, until it is all extracted; then cut it off. But if it does not respond to your attempts to draw and extract it, pass in a needle with a strong double thread and ligate it and draw it up; and introduce a probe beneath it, and twist it all round until it comes out; but be careful lest it break; for if it break the total extraction of it will be very difficult for you and harm will thereby come to the patient. When you have got it all out, apply to the incisions wool soaked in wine and oil of roses, or olive-oil, and dress it till it be healed.

If the varix be contorted, with twists and turns from side to side and not in a straight line, as we said, then you should cut down along both sides of the twisted part and the places where it is tortuous, then catch it up with

20 الركبة وأما في أسفله عند الكعب ثم تفتح الجلد بالصنانير وتسليخ
 العرق من كل جهة حتى يظهر للحس وهو عند ظهوره تراه أحمر
 قانثا فإذا خلص من الجلد تراه أيضا كآته الوتر، ثم تدخل تحته
 مرودا حتى إذا ارتفع وخرج عن الجلد علّقه بصنارة عمياء ملساء، ثم
 شق شقا آخر بقرب ذلك الشق بقدر ثلاث أصابع ثم اسليخ الجلد من
 25 على العرق حتى يظهر، ثم ارفعه بالمرود⁴ كما فعلت وعلّقه بصنارة
 أخرى كما فعلت أولا، ثم شق شقا آخر أو شقوا كثيرة إن احتجت
 الى ذلك، ثم سلّه واقطعه في آخر الشق عند الكعب ثم اجذبه
 وسلّه حتى يخرج من الشق الثاني ثم اجذبه الى الشق الذي فوقه
 وافعل ذلك حتى تجذبه من الشق الثالث أعلى الشقوق كلها حتى
 30 إذا خرج جميعه فاقطعه، فإن لم يجبك للجذب والسل فأدخل إبرة
 بخيط قوى مثنى واربطه واجذبه وأدخل تحته المرود وافتل به يدك
 الى كل جهة حتى يخرج وتحفظ لا ينقطع فإن انقطع فإنه يعسر
 عليك سلّه جدا ويدخل على العليل منه مضرة، فإذا سلّته كله فضع
 على موضع الجراحات صوفا مغموسا في شراب ودهن ورد أو زيت
 35 وعالجه حتى يبرأ،

فإن كانت الدالية متشنجة ذات تعاريج لها التواء الى جهات⁶
 ولم تكن على استقامة كما قلنا فينبغي أن تشق عليها عند كل جهة
 من تعاريجها ومواضع التواءها ثم تعلقها بالصنانير حتى تسليها

الجها 6. AH. بالمراد 5. cett. ابيض M, احمر V, ايضا H, 4.
 P. كل الجها H,

hooks and extract it whole. Be careful in incising over it that you do not cut into or injure the vein, for this will render the extraction difficult; therefore be most careful.

The lancet for cutting upon a varix (fig. 176).

The blunt hook (fig. 177). It is not bent like other hooks, and its extremity must be blunt so as to not injure the vein. It should be of a broad curve and smooth, for if it is fine-pointed its fineness may cut the vein; rather it should be quite thick, as we said.

٤٥ بأجمعها ، وتحفظ عند شقك عليها أن تقطع العرق أو تجرحه فإنــــه
يعسر عليك سله فتحفظ جهدا
صورة النشل الذي تشق به الدالية :

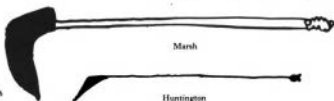


Fig. 176

صورة الصّارة العمياء :

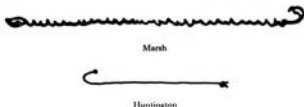


Fig. 177

لا يكون لها تعقيد كسائر الصنانير ولا تكون حادة الطرف لئلا
تجرح العرق وتكون غليظة الانثناء طسا لأنها إن كانت رقيقة قطعت
٤٥ العرق برقتها بل يكون لها فضل غلظ كما قلنا

CHAPTER NINETY-ONE. On the extraction of the Medina vein.

This kind of vein occurs in the leg in hot countries such as the Hejaz and the lands of the Arabs¹ and in hot arid infertile countries. It also often occurs in other parts of the body beside the legs. The origin of it is a corruption taking place beneath the skin in the same way that round-worms and worms and gourd-worms arise in the inward parts of the body; also the worms that are generated between the skin and the flesh. The sign of the beginning of the occurrence of this vein is a violent inflammation in the leg; then the place swells up and blisters; then the vein begins to extrude at the blistered place as if it were a plant-stem or an animal. When its extremity has appeared it should be wound and tied round a little piece of lead, from one to two drachms in weight, which you leave hanging from the leg. Then as fast as any of it issues from the leg, wrap it in the lead, and if there be plenty of it cut off part and tie the rest of it; do not cut it right down until it has all come out; for if you cut it right down it will contract and draw back into the flesh and produce at the place an abscess and suppuration and a bad ulcer. Therefore it should be treated gently, and drawn out slowly until the very extremity of it emerges and not the least bit of it remains in the body. In some cases the vein comes out five or ten spans in length; indeed I have heard of one twenty spans long that came out from a certain man. If it breaks during your treatment of it, then pass a probe into the hole and open it up with a long incision longitudinally, until all the contained matter is evacuated; and try to make the place

¹ M reads 'the lands of the West'.

BOOK TWO. CHAPTER NINETY-ONE

Guinea-worm, so-called, was dealt with by Galen (*Medicus* 19) immediately after varicose veins, and was a disorder (*δρακόντις*) described by him as resembling varices, but showing up little; but at the same time very painful on removal. One wonders from Albucasis' description of it, whether it might

perhaps have been phlebitis. On the other hand his definite mention of the actual worm as measuring from ten to fifteen spans in length must be respected. The account of treatment here, by tying a weight on to the end of the worm, seems to be taken from Paulus (iv. 59).

الفصل الحادى والتسعون فى سَلِّ العرق المدنى

هذا العرق يتولد فى الساقين فى البلدان الحارة كالحجاز
ولدان العرب¹ وفى البلدان² الحارة³ القليلة الخصب وربما تولد
فى مواضع آخر من البدن غير الساقين وتولد عن عفونة تحدث تحت
5 الجلد كما تحدث فى داخل الأبدان الحيات والدود وحَب القـرع
والدود المتولد بين الجلد واللحم، علامة ابتداء حدوث هذا العرق
أن يحدث فى الساق تلهب شديد ثم يتنقط الموضع ثم يبتدئ العرق
يخرج من موضع ذلك التنقط كأنه أصل نبات أو حيوان فإذا ظهر منه
طرفه فينبغى أن يلف على قطعة صغيرة من رصاص تكون زنتها من
10 درهم كيل الى درهمين وتعقده وتترك الرصاص معلقا من الساق،
فكلما خرج منه شئ الى خارج لفته فى الرصاص وعقده فإن طال
كثيرا فاقطع بعضه ولف الباقي ولا تقطعه من أصله قبل أن يخرج
كله لأنك إن قطعته تقلص ودخل فى اللحم فأحدث ورمما وعفنا فى
الموضع وقرحة رديئة فلذلك ينبغى أن يدارى ويجر قليلا قليلا حتى
15 يخرج عن آخره ولا يبقى منه شئ فى البدن، وقد يخرج من هذا
العرق فى بعض الناس ما يكون فى طوله خمسة أشبار وعشرة وقد
بلغنى أنه خرج لرجل من عشرين شبرا، فإن انقطع لك فى حين
علاجك له فأدخل مرودا فى ثقبه ويطه بظا طويلا مع البدن حتى
يتفرغ كل ما فيه من مادة وحاول تعفين الموضع بالأدوية آتاما ثم

القضية A, الضعيفة, MV, 3. cett. الابدان, M, 2. M. الغرب, 1.
cett.

suppurate with medicines for a few days, then treat as an abscess. Sometimes also this vein is found branching, especially when it appears at the joint of the foot or on the foot itself; and in this case there are many openings and a branch comes out of each. The treatment is as mentioned above in the section.

20 عالجه بعلاج الأورام ، وقد يكون هذا العرق ذا شعب كثيرة ولا
سيما اذا ظهر في مفصل الرجل او في الرجل نفسه فيحدث له أفواء
كثيرة ويخرج من كل فم شعبة فعالجه كما ذكرنا في التقسيم وبما
تقدم ،

CHAPTER NINETY-TWO. On incision for the worm arising beneath the skin, called 'the cattle disease'.

This complaint is called by us in some regions 'the cattle disease' since it frequently happens to cattle. It is in fact a small solitary worm generated between the skin and the flesh, that creeps all over the body, both up and down; it can be felt as it creeps from one part to another until it breaks out at a place where it can break through the skin, and out it comes. It arises from the putrefaction of certain humours as do worms, round-worms and gourd-worms in the abdomen. Part of the harm that may be expected of it is that when it creeps about the body and goes up to the head and reaches the eye it may make an opening in the eye and come out and destroy the eye; this frequently happens. If you wish to treat this and extract it, it must be done while it is creeping about and can be felt. You must tie a tight tourniquet above and below it, then cut down upon it and extract it. But if it burrows into the tissues and you cannot locate it, then apply the actual cautery to the place until you have burnt the worm. The greatest damage to be feared from it is damage to the eye, as we have said. So if you see that it has entered the head and is near the eye, then bind a strong bandage over the forehead beneath it, then cut down upon it and draw it out. It is important also for the patient to take care to cleanse his body with laxative medicines from all corrupt and evil humours. He should also avoid all foods giving rise to putrefaction.

BOOK TWO. CHAPTER NINETY-TWO

Round-worm infection seems to answer to the clinically characteristic description of this complaint. Classical authors pass it over.

الفصل الثانى والتسعون فى الشق على الدود المتولد تحت الجلد
ويسمى علّة البقر

هذا المرض يسمى فى بعض البلدان عندنا علّة البقر من أجل
أنها كثيرا ما يعرض للبقر وهى دودة صغيرة واحدة تتولد بين
5 الجلد واللحم وتدب فى الجسم كله صاعدة وهابطة تتبين للحس عند
دبيبها من عضو الى عضو حتى تخرق حيث ما خرقت فى الجلد
موضعا وتخرج وتكونها من عفونة بعض الأخلاط كما يعرض للدود¹
والحيات وحب القرع فى البطن، وإنما يتوقع من أذيتها أنها اذا
دبت فى الجسم وارتفعت الى الرأس وبلغت الى العين فرمما فتحت
10 فيها وخرجت فأبطلت العين ويعرض ذلك كثيرا، فلذا أردت علاجها
وأخراجها فإنما يكون ذلك عند دبيبها وظهورها للحس فينبغى أن
تشد ما فوقها وتحتها برباط شدا جيدا ثم شق عليها وأخرجها،
فإن غاصت فى اللحم ولم تجدها فاحمل على الموضع الكى بالنار حتى
تحرقها، وأعظم ما يتوقع إفسادها للعين كما قلنا فإن رأيتها قد
15 صارت فى الرأس قرب العين فشدها تحتها على الجبين شدا جيدا ثم
شق عليها وأخرجها، وينبغى أن يتعاهد العليل تنقية جسمه
بالأدوية المسهلة للأخلاط العفنة الرديئة والتحفظ من الأغذية المولدة
للعفونة،

MV. الدود 1.

CHAPTER NINETY-THREE. On incision for the disease known as 'flitting disease'.

The disease known in our region as 'the flitting disease' is a pain arising in a limb and then passing from limb to limb. I have personally seen it as I shall describe to you: I was called to a woman patient in a country district, who uncovered her arm and showed me a small inflation of the cephalic vein. After I had waited a while I saw the swelling creep like a worm along the forearm, ascending towards her shoulder,¹ with the greatest possible speed, as of quicksilver running from place to place. Then the pain left that place and settled in the elbow. Then I waited a while and the pain ran through the whole body until it reached the other arm. Then she related to me that it used to pass all round her body as I had seen it. I was amazed at the speed with which it migrated from one part to another, as I had never before seen this disease in this form, though I had seen many who had a pain that passed from limb to limb; but never with my own eyes had I seen anything like what I saw in this woman. The only opinion I could form of it was that it was due to the woman's being of the dwellers in the wilds, dry of body, with outstanding veins, and hence that moving vapour was perceptible. But it follows then that it does not appear in that manner in people leading a leisured life, with humid bodies and hidden veins. When you want to cure this, and the patient feels the pain of it, and if you observe the appearance we have described, then tie a bandage round above and beneath it as quickly as possible and cut down on it so that the vapour enclosed there may come out; and cauterize the place. But if there is nothing visible to you then treat by purging of the body and by medicines dispelling and getting rid of flatus, such as foetid pills and pills of sagapenon² and the like.

¹ Possibly a slip for 'elbow'?

² A member of the *Ferula* family which yield asafoetida and other such gums Arabic.

BOOK TWO. CHAPTER NINETY-THREE

al-nāfir—the flitting disease—is very interesting but very obscure. It is tempting to regard it as thrombophlebitis migrans. The case he describes from his own experience is too circumstantial to allow doubts to be

cast upon the symptomatology, even if the pathology be open to question. No classical writer seems to have described this condition

الفصل الثالث والتسعون فى الشقّ على المرض الذى يعرف بالنافر
 هذا المرض الذى يسمّى فى بلدنا النافر هو وجع يعرض فى
 بعض الأعضاء ثمّ ينتقل من عضو الى عضو وقد رأيته على ما أصفه لك،
 دعيت الى امرأة عليّة فى بعض البوادي فكشفت عن ذراعها وأرتنى¹
 5 نفخا يسيرا فى عرق حبل الذراع فلما بقيت ساعة رأيت ذلك النفخ
 يدبّ مع الزند كما تدبّ الدودة صاعدا الى منكبها بأسرع ما يمكن أن
 يكون كالزئبق اذا سال من موضع الى موضع ، فزال الوجع من ذلك
 المكان وثبت فى المنكب ، ثمّ قعدت ساعة فجرى فى سائر الجسم حتى
 صار فى الذراع الآخر، ثمّ حكّت لى أنّه يدور جسمها كلّ على ما
 10 شاهدت فعجبت من سرعة انتقاله من عضو الى عضو ولم أكن قبل
 رأيت هذا المرض بعينى² هكذا على هذه الصفة إلا أنّى رأيت جماعة
 يجدون الوجع ينتقل من عضو الى عضو ولم أره بعينى كما رأيته فى
 هذه المرأة ولم أقدر³ ذلك إلا أن يكون³ من أجل أن المرأة كانت من
 أهل البادية يابسة البدن مكشوفة العروق فمن هنا ظهر للحس ذلك
 15 الريح المنتقل ووجب أن لا يظهر على هذا القياس فى أهل الرفاهية
 والأبدان الرطبة الخفية العروق ، فإذا أردت علاجه وأحس صاحبه
 بالوجع فإنّ ظهر اليك بالعيان كما ذكرنا فشذّ فوقه وتحتّه بالعجلة
 وشقّ عليه حتى يخرج ذلك الريح المحتقن واكو المكان ، فإن لم تره
 بعينك فعالجه بنفض البدن وما ينفى الرياح ويفشها مثل حبّ المنتن
 20 وحبّ السكبينج ونحوها من الأدوية ،

1. MV, cett. فرأيت. 2. om. AHP. 3. P. ان ذلك يكون الا.

CHAPTER NINETY-FOUR. On the extraction of arrows.¹

Arrows vary both as to types and as to the different parts of the body pierced by them. They differ thus as to type: some are big and some are small; some with hollow heads and some with solid; some of them have three angles and some four; some have tongues; some have spikes. The difference due to the part transfixes by the arrow is twofold: for there are either the chief hollow organs such as the brain, the heart, the liver, the lungs, the kidneys, intestine, bladder, and so forth—when one of these arrows transfixes an organ of this kind, and you observe the signs of death which I shall describe to you later, then you must avoid the extraction of the arrow in that case, for death will generally follow; but when you do not see these fatal signs and the arrow is not quite buried in the depths of the organ, then extract it and dress the wound.

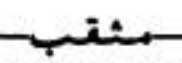
Now the signs when the arrow has struck the brain, and penetrated the bone and injured the meninges covering the brain, are these: there arise from that a violent headache and vertigo and giddiness and a redness in the eye, and a redness of the tongue, and convulsion and mental confusion and bilious vomit; perhaps also blood comes out of the nose or from the ears; often also the speech is affected and the voice is lost; also there comes out of the site of the wound a white fluid which resembles gruel, from which there flows something like the juice of meat. If you observe these signs, avoid treating the patient and extraction of the arrow if it has not come out.

¹ It will be seen that 'arrow' is generally to be understood as 'arrow-head'.

BOOK TWO. CHAPTER NINETY-FOUR

The extraction of weapons was from the earliest times one of the most important departments of medical practice (Paulus quotes Homer as appraising highly the value of the medical man who knew how to extract weapons from the body); yet there is no reasoned statement of treatment extant, until Celsus wrote his chapter (VII. 5) on the subject. There was indeed a pseudo-Hippocratic treatise *Περὶ τραυμάτων καὶ βελῶν* quoted by Erotian but now lost. Celsus really governed the writings of all succeeding authors down to Paulus and Albucasis. This chapter begins with an outline of the different types of weapon. It then describes the clinical signs of the transfixing of various important parts

or viscera of the body; and illustrates the subject by accounts of a number of actual cases that had come under his care. Then Albucasis gives directions for dealing with the lodgement of weapons in the body and as he goes along he describes and illustrates the various instruments required.

1. *Trepan* or *drill*— *mithqab*—is to be used to bore the bone away all round a weapon stuck fast in a bone. The word used is that also used for trocar, given, with an illustration, in chapter 19 for the operation of turning a lacrymal fistula into the nose. Boring instruments are further discussed in connection with Book III, chapter 2.

الفصل الرابع والتسعون فى إخراج السهام

السهم قد تختلف بحسب أنواعها وبحسب المواضع التى تقع فيها من الجسم وأما اختلافها بحسب أنواعها فإن منها كبارا وصغارا ومنها زجاج مجوفة وزجاج مصمتة ومنها ما لها ثلاث زوايا وأربع زوايا 5 ومنها ما لها السنة¹ ومنها ما لها شظايا² ، وأما التى تكون بحسب الأعضاء التى تقع فيها فتكون على ضربين إما أن تكون الأعضاء من أعضاء رئيسة مجوفة مثل الدماغ والقلب والكبد والرئة والكليتين والمعدة والمثانة ونحوها فمضى وقع سهم فى أحد هذه الأعضاء وظهرت لك علامات الموت التى أنا واصفها لك بعد فينبغى أن تجتنب إخراج 10 ذلك السهم منها فإن الموت يلحق صاحبها فى أكثر الأحوال ، ومتى لم تظهر لك هذه العلامات الرديئة ولم يكن السهم توارى فى غور العضو فأخرجه وعالج الجرح ،

ومن علامات الدماغ اذا واقع سهم وأنفذ العظم وجرح الصفاق الذى على الدماغ فإنه يعرض من ذلك صداع شديد وسدر ودوار 15 وحمرة فى العينين وحمرة اللسان وتشنج واختلاط عقل وقذف مرة وربما خرج الدم من المنخرين أو الأذنين وربما انقطع الكلام وذهب الصوت وخرج من موضع الجرح رطوبة بيضا³ تشبه العصيدة ويجرى⁴ منها⁵ مثل مائية⁴ اللحم ، فإن ظهرت لك هذه العلامات فأمسك عن علاج العليل وأخرج⁵ السهم إن كان لم يخرج ،

1. HV s. p. , الستة cett. 2. M, يخرج cett. 3. MV. منه

4. M. ما غساله 5. HM. وأخرج

The signs of an arrow in the heart are: nearness to the left breast; the patient feels it as if it were fixed in something solid, not hollow; often also there will be imparted to the arrow a pulsating movement; and black blood will issue from the wound; and after this follow coldness of the extremities and a cold sweat and unconsciousness; then you may know that death is surely on its way.

The sign of an arrow that has wounded the lung is the exit of frothy blood from the wound; also the vessels that lie along the neck swell up and the patient changes colour, breathes heavily, and seeks to inhale fresh air very strongly. But if the arrow strike the pleura then it will be close to the small ribs and he will breathe deeply with much pain and heaving of the chest, and all parts of his shoulders will be agitated.

If the arrow hits the liver, there ensues violent pain, and blood flows from the wound, resembling the liver in its redness. If the arrow strikes the stomach, often undigested food comes out of the wound and renders the case obvious. If the arrow wounds the belly and is fixed in it, and from the wound there comes excrement or omentum or torn bowel, there is no hope in treatment nor in extracting the arrow.

If the arrow has hit the urinary bladder, and urine comes out and some of the bladder protrudes and the patient has violent pain, then you may know that the wound is mortal.

But as for the other parts, such as the face, eye, throat, shoulder, arm, dorsal vertebrae, collar-bone, hip, leg, and the like, in most cases they will heal if the arrow does not happen to strike an artery or nerve, and if the arrow is not poisoned. Now I will relate to you certain cases of arrow wounds that I have seen, so that you may be guided thereby to your own

2. *Forceps* for seizing the buried head when the shaft has been broken off. These (fig. 178) exactly resemble the *kalālīb* for the extraction of teeth (see chapter 31). Paulus designates such forceps βέλουλκος (vi. 88).

4. *Thruster*. This is called مدفع—*midfa'*—which is the same as for the thruster for the foetus (chapter 77). The description here is very short; and the drawings (figs. 179 and 180) are quite different in the two MSS. The Marsh MS. shows two varieties: the hollow, and the blind or solid. The first was evidently a hollow tube to receive the point or tang of an arrow into itself, enabling it to be

thrust on in its course until it emerged through the tissues on the opposite side. The solid, or blind thruster was a male variety to fit into the hollow ferrule of the arrow and enable the same manœuvre to be carried out. Both Marsh drawings look as if male and female elements were combined, one at either end, in one instrument. The Huntington drawings are inexplicable.

This instrument corresponds with that termed διωστήρ by Paulus (vi. 87): 'We make an opening by means of the weapon itself, pushing it by the shaft; or if that has come away, by a διωστήρ . . . and if the weapon has

20 وأما علامات السهم اذا واقع القلب وكان قريبا من الشدى الأيسر وحس به كأنه قد انغرز فى شىء صلب لا فى شىء فارغ وربما كانت للسهم حركة تشبه حركة النبض ويسيل من الجرح دم أسود ويتبع ذلك برد الأطراف وعرق بارد وغشى فاعلم أن الموت نازل لا محالة،

وعلمة السهم اذا جرح الرئة خرج دم زبدى من الجرح والأوعية التى تلى العنق تتورم ويتغير لون العليل ويتنفس تنفسا 25 عاليا ويطلب استنشاق الهواء البارد، فإن واقع السهم الحجاب الذى فى الصدر فإنه يكون قريبا من الأضلاع الصغار ويكون التنفس عظيما مع وجع شديد وتنهد⁶ ويتحرك جميع أعضاء المنكبين،

وإن واقع السهم الكبد اتبع ذلك وجع شديد وخرج من الجرح 30 دم يشبه الكبد فى حمته، وإن واقع السهم المعدة فرثما خرج من الجرح من الغذاء شىء غير منهضم وأمره ظاهر، وإن واقع السهم البطن ونشب فيه وخرج شىء من البراز من الجرح او الشرب او معا⁷ قد انخرق فلا مطمع فى علاجه ولا فى إخراج السهم،

فإن كان السهم واقع المثانة وخرج البول وبرز منها شىء الى 35 خارج واشتد الألم على العليل فاعلم أنه هالك،

وأما سائر الأعضاء كالوجه والعين⁸ والحلق والكف والعضد وفقر الظهر والترقوة والفخذ والساق ونحوها من الأعضاء فقد تسلم على الأمر الأكثر متى لم يصادف السهم شريانا او عصبا ولم يكن السهم مسموما، وأنا أخبرك ببعض ما شاهدته من أمر هذه السهام لتستدل

B, والعين والعنق, MV. 8. M. المع. 7. M. والسهر, B, وتنهر. 6. cett. والعنق.

methods of treatment. For example, once an arrow struck a man at the corner of his eye near the root of the nose, and I extracted it from him on the other side beneath the lobe of his ear, and he got well, and his eye was none the worse. Also I extracted from a Jew another arrow that had pierced the orbit beneath the lower eyelid; the arrow had sunk out of sight and I could take hold only of the tiny extremity of it which is secured to the shaft; but it was a big arrow from a compound¹ bow, the iron tip four-sided, very smooth without barbs. The Jew recovered, nor did any ill befall his eye. I also extracted another arrow from the throat of a Christian. It was an Arab arrow, one of those with two barbs; and I cut down upon it between the two jugulars (for it lay deep in the throat), and worked gently at it until I extracted it; and the Christian was saved and recovered. I also extracted another arrow from a man, that had struck him in the abdomen, and our opinion was that he would certainly die from it. But when it had remained in him for the space of thirty days or thereabouts, and his condition was unimpaired, I cut down upon the arrow and manœuvred it out and extracted it; and he recovered, nor did any harm befall him. I also saw a man who had been struck in the back by an arrow and the wound had closed over it; and when the space of seven years had elapsed the arrow came out at the root of the hip. And I saw a woman who had been struck in the abdomen by an arrow and the wound healed with the arrow remaining in it, and her condition was unimpaired; she felt no harm from it and her natural functions were not harmed. And I saw a man who had been struck by an arrow in the face, and it had healed over, and he did not feel much pain from it. And many such have I seen. I once drew out an arrow from one of the officers of the State, that had struck him in the middle of the nose and was inclining a little to the right, and the whole arrow was buried. I was called to treat him three days after he had received the arrow

¹ So MP. The other MSS. read 'Turkish'.

a tang . . . having introduced the female part of the instrument and engaged it, we push the weapon forward; or if it has a socket, the male part'. The word *διωστήρ* literally means 'through-pusher'. The arrow extractor de-

scribed by Celsus (VII. 5, 3)— . . . *quod Diocleum cyathiscum Graeci vocant*—seems to have fallen out of use by the time of Paulus and receives no notice by Arab surgeons.

40 بذلك على علاجك، وذلك أن سهما كان قد واقع لرجل في ماق عينه
 في أصل الأنف فأخرجته له من الجهة الأخرى تحت شحمة الأذن
 وبرئ ولم يحدث في عينه مكروه، وأخرجت سهما آخر لليهودي كان
 قد واقعه في شحمة عينه تحت الجفن الأسفل وكان السهم قد توارى
 ولم ألحق منه إلا طرفه الصغير الذي يلصق في الخشبة وكان سهما
 45 كبيرا من سهام القسي المركبة⁹ مرتع الحديد أمس لم يكن فيه أذنان
 فبرئ اليهودي ولم يحدث في عينه حادث سوء، وأخرجت سهما آخر
 من حلق نصراني وكان السهم عربيا وهو¹⁰ الذي له أذنان فشقت عليه
 بين الوداجين وكان قد غار في حلقه فلطفت به حتى أخرجته فسلم
 النصراني وبرئ، وأخرجت سهما آخر لرجل كان قد واقعه في بطنه
 50 وقد رنا أنه سيموت منه فلما بقي مدة ثلاثين يوما أو نحوها ولم يتغير
 عليه شيء من أحواله شقت على السهم وتحملت عليه وأخرجته وبرئ
 ولم يعرض له حادث سوء، ورأيت رجلا واقعه سهم في ظهره فالتحم
 الجرح عليه فلما كان بعد سبعة أعوام خرج السهم في أصل فخذه،
 ورأيت امرأة قد واقعتها في بطنها سهم والتحم الجرح وبقي السهم
 55 ولم يتغير من أحوالها شيء ولا كانت تجد له ضررا في شيء من
 أفعالها الطبيعية، ورأيت رجلا آخر واقعه سهم في وجهه والتحم
 الجرح وبقي لا يجد له كثير ألم، ومن مثل هذا كثير، وأخرجت
 سهما لرجل من قواد السلطان كان قد واقعه في وسط أنفه قد مال
 إلى الناحية اليمنى قليلا وغاب السهم كله فدعيت إلى علاجه بعد

9. MP, التركية cett. 10. om. MV.

wound; and I found the arrow wound very narrow. I explored it with a fine probe but did not find it; but the patient felt a pricking and a pain beneath the right ear, and I hoped that the pricking was due to the arrow. So I applied a poultice to the spot, a poultice with power to draw out and cause suppuration, desiring that the place should swell and that a sign to indicate the arrow should appear so that I could cut down upon it. But nothing happened at that place to indicate that the arrow had come through to there; so I persevered with poulticing it for many days; yet nothing fresh manifested itself and the wound healed up meanwhile, and the patient despaired for a time of its extraction. Then one day he felt the arrow inside his nose, and he told me of this; so for a number of days I applied a caustic medicine to the wound until it opened. I explored it, and felt the slim end of the arrow which is fastened to the shaft; then I enlarged the opening of the wound by the use of the caustic until the tip of the arrow was plainly visible to me. About four months passed. Then when the wound was enlarged and I was able to introduce forceps into it I pulled on it and moved it, but it would not come out. And I went on skilfully and gently trying for it with various instruments until one day I caught hold of it with a pair of strong forceps (their shape will be described at the end of the chapter) and drew it out; then dressed the wound. The medical men judged that the cartilage of the nose would not be restored, but I restored it and the wound healed up and the patient made a complete recovery nor did he suffer any harm.

Now I shall tell you the method of extracting certain arrows so that you may take it as a guide and an analogy for others that I have not mentioned; since all parts and details of this art cannot be comprehended in any

60 وقوع السهم الى "ثلاثة أيام فوجدت جرح السهم ضيقا جدا ففتشته
بمسبار رقيق فلم أحس به وكان يجد نخسا ووجعا تحت أذنه من
الشق الأيمن فرجوت أن يكون ذلك النخس من طرف السهم فضمدت
الموضع بضاد فيه قوة جذب ونضج طمعا متى أن يتورم الموضع
وتظهر علامة السهم فأشق عليه فلم يحدث في الموضع حادث يدل
65 على أن السهم بلغ الموضع فتعاديت بالضاد عليه أياما كثيرة فلم
يحدث حادث فانختم في خلال ذلك الجرح وبقي العليل مؤيسا من
إخراجه مدة¹² حتى أحس بالسهم يوما في داخل أنفه فأخبرني الخبر
فوضعت على الجرح الدواء الحادث الأكال أياما كثيرة حتى انفتح
وسبرته فأحسست بطرف السهم الرقيق الذي يلصق في الخشبة ثم
70 زدت في فتح الجرح بذلك الدواء الحادث حتى ظهر إلينا بالعيان
طرف السهم ومضى لي معه مدة من الزمان نحو أربعة أشهر ثم لما
توسع الجرح وتمكن لي دخول الكلاب في جذبته وحركته فلم يستجب
للخروج فلم أزل ألافه وأتحيل عليه بضروب من الآلات حتى قبضت
عليه يوما بكلاليب محكمة على ما تأتي صورتها في آخر الباب حتى
75 أخرجته ثم جبرت الجرح وكان الأطباء يحكمون على أن غصروف أنفه
لا ينجبر فجبرته والتحم الجرح ورأى العليل برا تاما لا يؤذيه شيء
البتة،

وأنا أخبرك بكيفية إخراج بعض السهام لتجعل ذلك قياسا
ودليلا على ما لم أذكره لأن أجزاء هذه الصناعة وتفصيلها لا يدرك

11. بعد P. 12. MP, مدة أيام cett.

description, nor can any book include them. A skilful worker will form a judgement on much, from little; and on what is not present from what is before him; and he will think out a new method and a new instrument for an unaccustomed case when it occurs in the practice of this art.

So I would state that arrows come out from the parts of the body they have transfixed, in two ways: either by drawing out from the site of entry; or from the opposite side. An arrow that comes out by the track of its entry: the arrow may be visible, standing out from a fleshy part, in which case it may be extracted by pulling. If it does not respond to traction immediately it strikes, you must leave it for a few days until the surrounding tissues have suppurated, when the pulling and extraction of it will be made easy. Similarly if it has stuck fast in a bone and will not come out, leave this also for a few days, repeatedly pulling on it and shifting it day by day, and then it will come out. But if it will not come out after some days, you will have to drill away the bone from all round with a fine drill so as to make room for the arrow; then draw on it and pull it out.

If the fixed arrow be in the bone of the head and has gone through into one of the ventricles of the brain and the patient exhibits some of the symptoms that I have mentioned to you, then refrain from pulling the arrow out but leave him for a few days until his case becomes clear. For if the arrow has reached the meninges, death will not keep him waiting. If the arrow be no more than fixed in the substance of the bone and has not penetrated to the meninges, and the patient goes on for some days without any of these symptoms occurring, then try skilfully to pull it out and remove it. But if it is very firmly fixed and will not respond to traction, use drills round the arrow, as I told you, then dress the place until it heals.

80 بالوصف ولا يحيط به كتاب وإنما المصانع الحاذق يقيس بالقليل على الكثير وما حضر على ما غاب ويستنبط عملا جديدة وآلة جديدة عند النوازل الغريبة اذا نزلت من هذه الصناعة،

فأقول إنَّ السهام إنما تخرج من الأعضاء التي نشبت فيها على نوعين إما بالجذب من الموضع الذي دخلت منه وإما من ضدَّ الجهة الأخرى ، والتي تخرج من حيث دخلت إما أن يكون السهم بارزا في موضع لحمي فيجذب ويخرج فإن لم يجبك للخروج من وقت¹³ الذي وقع فيه فينبغي لك أن تتركه أياما حتى يتعفن اللحم الذي حوله فيسهل جذبه وإخراجه وكذلك إن نشب في عظم ولم يجبك للخروج فاتركه أيضا أياما وعاده بالجذب والتحريك كل يوم فإنه يخرج ، فإن لم يجبك للخروج بعد أيام فينبغي أن تثقب حول السهم في نفس العظم من كل جهة بثقب لطيف حتى توسع للسهم ثم تجذبه وتخرجه،

فإن كان السهم الناشب في عظم الرأس وقد أمن في أحد بطون الدماغ وظهرت من العليل بعض تلك الأعراض التي ذكرت لك فأمسك عن جذب السهم واتركه حتى يستبرئ أمره بعد أيام فإنه إن كان السهم قد وصل الى الصفاق فإنَّ النية لا تعطله ، وإن كان السهم إنما هو ناشب في جرم العظم فقط ولم يتم¹⁴ الى الصفاق يبقى العليل أياما ولم يحدث له من تلك الأعراض شيء فاحتل في جذب السهم وإخراجه ، فإن كان ناشبا جدا ولم يجبك للجذب فاستعمل المناقب حول السهم كما وصفت لك ثم عالج الموضع حتى يبرأ،

13. >ولا على الموضع< P. 14. AV, cett.

If the arrow is buried in some part of the body and is quite lost to sight, explore for it with a probe, and if you can feel it then draw it out with any suitable instrument. But if you cannot get at it on account of the narrowness of the wound and the depth at which the arrow is, and there be no bone nor nerve nor blood-vessel, then cut round it until the wound be sufficiently wide to enable you to take hold of it and extract it. And if it have two barbs by which it is held, free them from the adherent flesh all round, in any way you can; or, if you cannot free the tissues, try skilfully to break off the two barbs and twist them about until the arrow comes free.

Whenever you try to extract an arrow from any part, employ a twisting motion of your hand with the forceps in all directions until you free it; and use the utmost gentleness not to break the arrow and thus make it hard to draw it out and remove it. If you are unable to get it out at once then leave it for some days until the tissues that surround it putrefy, then return to it, for then the extraction will be easy; and if haemorrhage interfere use the remedies prescribed in the chapter dealing with that. Exercise the utmost care not to cut a blood-vessel or nerve or tendon; and employ the greatest skill in freeing the arrow; it should be done gently and unhurriedly and with perseverance, as I have told you. When extracting an arrow you should place the patient in the same position he was in when the arrow struck him, for that is more convenient; but if you cannot do this then let him be in whatever position is possible for you.

The arrow that is to be extracted from the opposite side either has some part protruding through or else the tip of the arrow gives rise to a palpable

وَأَمَّا إِنْ كَانَ السَّهْمُ قَدْ تَوَارَى فِي مَوْضِعٍ مِنَ الْجِسْمِ وَغَابَ عَنِ
 الْحَسِّ فَفَتِّشْهُ بِالْمَسْبَارِ فَإِنْ أَحْسَسْتَ بِهِ فَاجْذِبْهُ بِبَعْضِ آلَاتِ الَّتِي
 تَصْلَحُ لَجْذِبِهِ فَإِنْ لَمْ تَسْتَطِعْ عَلَيْهِ لَضِيقِ الْجَرْحِ وَلِبَعْدِ السَّهْمِ فِي
 الْغُورِ وَلَمْ يَكُنْ هُنَاكَ عَظْمٌ وَلَا عَصَبٌ وَلَا عِرْقٌ فَشَقِّ عَلَيْهِ حَتَّى تَتَوَسَّعَ ¹⁰⁵
 الْجَرْحُ وَتَتِمَّ بِالسَّهْمِ حَتَّى تَخْرُجَهُ ، فَإِنْ كَانَ لَهُ أُذُنَانِ تَمْسُكُ بِهِمَا
 فَخَلِّصِ اللَّحْمَ النَّاشِبَ فِيهِمَا مِنْ كُلِّ جِهَةٍ بِكُلِّ حِيلَةٍ يُمْكِنُكَ ذَلِكَ وَاحْتَلِ
 إِنْ لَمْ تَقْدِرْ عَلَى تَخْلِيسِ اللَّحْمِ فِي كَسْرِ الْأُذُنَيْنِ ¹⁵ وَفَتْلِهِمَا حَتَّى
 تَتَخَلَّصَ ،

وَأِذَا حَاوَلْتَ إِخْرَاجَ السَّهْمِ فِي أَيِّ مَوْضِعٍ كَانَ فَاسْتَعْمَلْ قَتْلَ يَدِكَ ¹¹⁰
 بِالْكَالِبِ إِلَى الْجِهَاتِ كُلِّهَا حَتَّى تَخْلُصَهُ وَارْفُقْ غَايَةَ الرِّفْقِ لئَلَّا يَنْكَسِرَ
 السَّهْمُ فَيَصْعَبَ عَلَيْكَ جْذِبُهُ وَإِخْرَاجُهُ ، فَإِنْ لَمْ تَسْتَطِعْ عَلَيْهِ مِنْ وَقْتِكَ
 فَاتْرِكْهُ أَيَّامًا حَتَّى تَعْفَنَ تِلْكَ اللَّحُومُ الَّتِي حَوَالِيهِ ثُمَّ تَعَاوَدْهُ فَإِنَّهُ
 يَسْهَلُ حِينَئِذٍ فَإِنْ اعْتَرَضَكَ نَزْفُ دَمٍ فَاسْتَعْمَلْ مَا ذَكَرْنَا مِنَ الْعِلَاجِ فِي ¹¹⁵
 بَابِهِ ، وَتَحَقَّقْ جَهْدَكَ مِنْ قَطْعِ عِرْقٍ أَوْ عَصَبٍ أَوْ وَتَرٍ وَاسْتَعْمَلْ الْحِيلَةَ
 بِكُلِّ وَجْهٍ يُمْكِنُكَ تَخْلِيسَ السَّهْمِ وَلِيَكُنْ ذَلِكَ بِرِفْقٍ وَتَأَنٍّ وَتَثَبَّتْ كَمَا وَصَفْتُ
 لَكَ ، وَيَنْبَغِي لَكَ أَنْ تَسْتَعْمَلَ عِنْدَ جَذْبِكَ السَّهْمِ أَنْ تُصِيرَ الْعَلِيلَ
 عَلَى الشَّكْلِ الَّذِي كَانَ عَلَيْهِ عِنْدَ وَقْعِ السَّهْمِ فَهُوَ أَوْفَقُ فَإِنْ لَمْ يُمْكِنَكَ
 ذَلِكَ فَاسْتَعْمَلْ مَا يُمْكِنُكَ مِنَ الْأَشْكَالِ ،

وَأَمَّا السَّهْمُ الَّذِي يَخْرُجُ مِنْ ضِدِّ الْجِهَةِ الْأُخْرَى إِمَّا أَنْ يَكُونَ ¹²⁰
 قَدْ بَرَزَ مِنْهُ شَيْءٌ إِلَى خَارِجٍ وَإِمَّا أَنْ تَجِدَ طَرَفَ السَّهْمِ بِالْحَسِّ مِنْ

? الْأَذَانُ codd. an leg. 15. الْأَذْنَانُ

swelling just beneath the skin and you see it sticking out; then cut down upon it; the incision should be wide enough to admit the forceps. Then pull on it, for the extraction of it will be easy. If it is stuck in bone, twist it round with your hand until the arrow makes an impression in the bone and opens up a way for itself; then pull it. If it does not come out, let it alone for some days, and repeat until it does come out. If the arrow-shaft be in the wound, then thrust the arrow out with that. But if the shaft has fallen out, and you wish to employ thrusting, introduce down to it the hollow instrument whose cavity will enter upon the ferrule of the arrow, then push it forward with that. If the arrow be hollow, thrust it forward with an instrument that will enter into the cavity, for the exit of the arrow will thereby be made easy.

If the arrow be poisoned you must, if you can, cut out in a circle all the flesh into which the poison has entered; then treat it with what is appropriate.

If the arrow that has struck be in the chest or abdomen or in the urinary bladder or in the flank and it be close enough for you to explore it with the probe and you can cut down upon it, then do so, but beware of cutting into a blood-vessel or nerve. Then remove the arrow. Afterwards suture the wound, if suture be necessary, and dress it until it heals.

Forceps for extracting arrows (fig. 178).

أعلى الجلد قريبا وتراه ناتيا فشق عليه وليكن الشق على قدر ما تسع فيه الكلاب ثم اجذبه فإنه يسهل للخروج ، فإن امتسك في عظم فافتل يدك على استدارة حتى يؤثر السهم في العظم ويوسع لنفسه ثم اجذبه ¹²⁵ وإلا فاتركه آياما ثم عاوده حتى يخرج ، فإن كان عود السهم فيه فادفعه به فإن كان قد سقط العود وأردت استعمال السدفع فأدخل اليه الآلة المجوفة لتدخل تجويفها في ذنب السهم ثم تدفعه بها ، فإن كان السهم مجوفا فادفعه بآلة تدخل في ذلك التجويف فإن السهم يسهل بذلك خروجه ،

¹³⁰ فإن كان السهم مسموما فينبغي أن تقور اللحم الذي قد صار فيه السم ¹⁶ كله إن أمكنك ذلك ثم عالجه بما يصلح لذلك ،

فإن كان السهم الواقع في الصدر او في البطن او في المثانة او في الجنب وكان قريبا مما يجسه بالمسبار وأمكك الشق عليه فشق وتحفظ من قطع عرق او عصب وأخرجه ثم خط الجرح إن احتاج الى ¹³⁵ الخياطة ثم عالجه حتى يبرأ ،

صورة الكلاب التي تجتذب بها السهام :

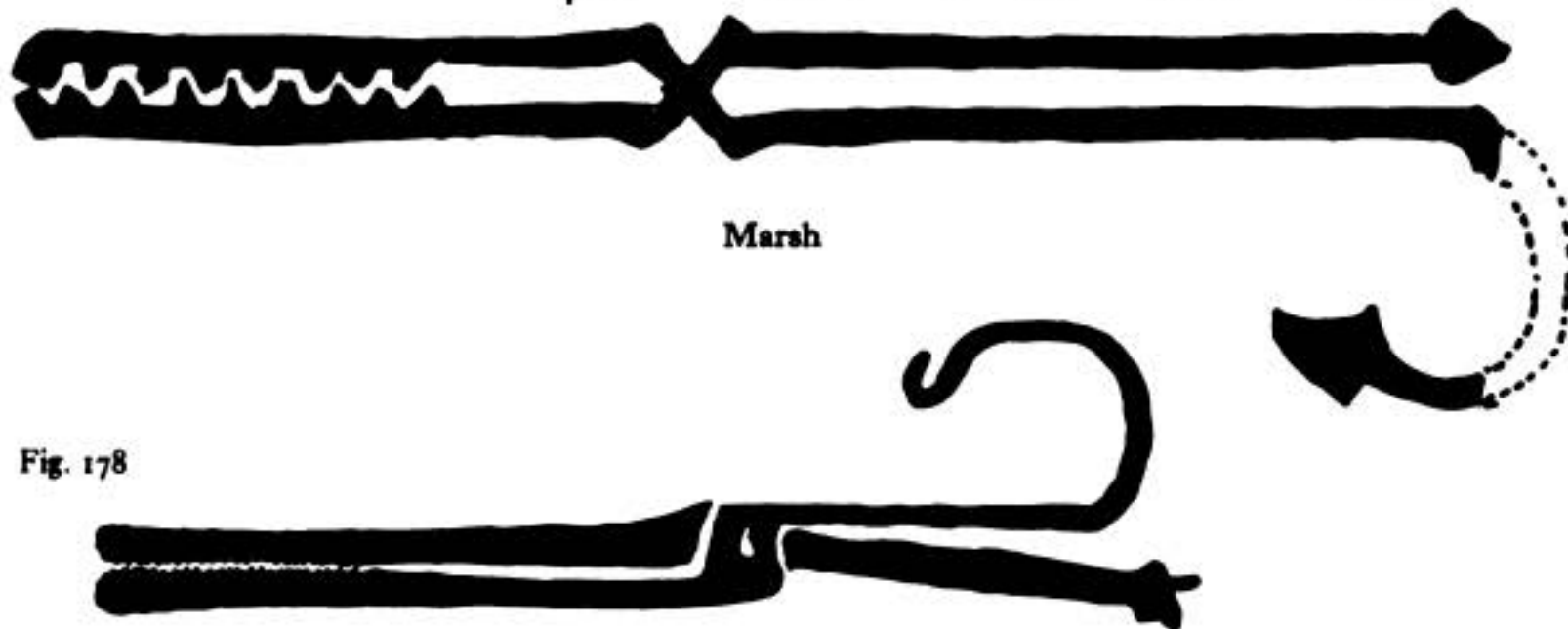


Fig. 178

Huntington

16. P, السهم cett.

The extremities resemble the bill of a bird and are engraved like a file so as not to lose grip when you close them upon an arrow or some other object. They are made in several kinds, large, small, or medium, all according to the bigness or smallness of the arrow and the breadth or narrowness of the wound.

The hollow thruster (fig. 179).

The solid thruster (fig. 180).

The extremity is solid like a probe, to facilitate entry into, and pushing, the hollow arrow.

تكون أطرافها شبه خرطوم الطائر قد صنعت كأنها المبرد اذا
 قبضت على السهم او شيء لم تتركه، وقد تصنع منها أنواع كـبار
 وصغار ومتوسطة كل ذلك على قدر عظم السهم وصغره وسعة الجرح
 140 وضيقه،

صورة المدفع المجوف:



Marsh



Fig. 179

Huntington

صورة المدفع المصمت:



Marsh



Fig. 180

Huntington

هذا مصمت الطرف كالمرود ليسهل دخوله في السهم المجوف
 ودفعه،

CHAPTER NINETY-FIVE. On venesection.

The blood-vessels in the body which it is customary to open are thirty-¹(two) in number. There are sixteen² of them in the head, and they are:³ two pulsating vessels behind the ears that are called the two occipitals; the two external arteries in the temples; and the two veins in the two internal angles of the eyes, called the vessels of sight; and the vein running up the middle of the forehead; and the vein situated at the tip of the nose; and the two jugular veins in the neck; and the two veins in the upper lip and the two in the lower lip; these being the veins known as 'the four vessels';⁴ and two veins beneath the tongue.

As for the veins that are bled in the arm and hand, they are five. One is the cephalic, which is on the outer side; popularly they call it the 'head-vein'; then there is the 'blue-black', that is, the median vein, which is made up of a branch from the basilic and a branch from the cephalic;

¹ M reads 'thirty-three', the rest 'thirty'.

² M 'seventeen', P 'fourteen'.

³ M here inserts 'the vein in the middle of the head, which is known as the *sinciput* and is also known as the *thousand-tongued*; to this are connected six veins: the auditory, which is a vein between the eyes, at the root of the nose; two veins within the two ears, in the cartilage; and the basilic veins of the two armpits (?); and a vein in the penis, on the back of it, by the great vein; and'.

⁴ *jahārak*, an arabicization of the Persian *chahār rag*.

BOOK TWO. CHAPTER NINETY-FIVE

Venesection may be the oldest of surgical procedures. Hippocrates refers to it; already it was so familiar as to need no direction. Until modern times it was the most universal operation (see Gurlt, *Geschichte der Chirurgie*, III. 556-7). Celsus seems to be the first to put it on a scientific footing (II. 10). He advanced the teaching of it to the point that venesection had indications even in the very young and the very old, in pregnancy, and in other conditions hitherto deemed outside its scope. Phlebotomy thus became, and remained through Roman, Arab and medieval European medicine, the universal remedy. Paulus (VI. 40) most likely inspired Albucasis; who excels all previous writers by naming no fewer than thirty blood-vessels as suitable for venesection.

1. *Phlebotome*—فأس—*fa's*—literally a pick-axe. This curious instrument (fig. 181) is shown in both MSS. The Marsh MS. shows a spike or spur set at an angle on a long handle; and at right angles to the spur, and thus angled in the opposite way in relation to the handle, is a curved piece. It seems reasonable to suppose this would be a guard to prevent the blade or spur sinking too deeply in. The perforation was secured, not by pressure but by striking the handle with an object such as a comb. This would be the instrument for piercing downward—καταπείρειν—according to Antyllus (in Oribasius VII. 10). The Huntington drawing shows the spike but not the guard. J. C. Anderson (*Roman City of Uriconium at Wroxeter* (1867)), describing the Roman remains at

الفصل الخامس والتسعون في فصد العروق

العروق التي قد جرت العادة بفصدها في البدن ثلاثون¹ عرقا منها في الرأس ستة² عشر عرقا³ العرقان النابضان اللذان خلف الأذنين المعروفان⁴ بالحسيين⁵ والشرطان اللذان في الصدغين⁵ الظاهران والعرقان اللذان في ماقي العينين المعروفان بالناظرين والعرق المنتصب في وسط الجبهة والعرق الذي في طرف الأنف والودجان اللذان في العنق والعرقان اللذان في الشفة العليا من الفم والعرقان اللذان في الشفة السفلى وهذه العروق المعروفة بالجهارك والعرقان اللذان تحت اللسان،

10 وأما العروق التي تفصد في الذراع واليد فهي خمسة عروق أحدها القيال وهو من الجانب الوحشي وتسميه العامة عرق الرأس والأكل وهو العرق الأوسط وهو مركب من شعبة الباسليق وشعبة من

والمعرق الذي في 3. P. أربع M, سبعة 2. M. ثلثه وثلثون 1. وسط الرأس المعروف باليافوخ وسمى أيضا الهزاردستان واصيف إلى ذلك ستة عروق وهي السامعه وهو عرق بين العينين عند أصل الأنف وعرقين داخل الأذنين في العصروف والباسليق الاطنين وعرق في المعروفين 4. A. M. الذكر وهو على ظهره عند العرق الكبير و B, الحشتاوين M, بالحشا V, بالحشا P, بالحشيشين H, 5. cett. S, om. A. بالحسنين

popularly they call that the 'body-vein'; then the basilic vein; this is the one situated on the inner side and is termed also the axillary vein, but popularly it is called the 'belly-vein'; and then the cord of the arm; this is situated over the radius and is the one that is contiguous to it;¹ this is the one that is clearly visible on the thumb. And the salvatella which is the vein between the little and ring fingers; it has two branches.

There are also three veins in the leg and foot; one of these is the sciatic vein on the outer aspect; the second is the saphena situated near the heel on the inner aspect; and there is the external saphena situated near the heel on the outer aspect. And there are three veins, counterparts to these, in the other leg.

Venesection of the two veins behind the ears. Bleeding from both of these will give relief in cases of chronic catarrh, migraine and chronic foul pustules, and scabs of the head. The method of venesectioning these two is as I shall now describe: the patient's head should be shaved and the hinder part, in the region of the two veins, should be strongly chafed with a rough cloth; then the patient should bind his neck with his turban until the two veins are visible; their position is behind the ears in the two flattened places of the head; feel for them with your finger and when you feel their pulsation beneath your finger then mark the place with ink. Then take a knife-scalpel, known as a lancet, and insert it beneath the vessel into the skin until the scalpel reaches the bone; then lifting with your hand both vessel and skin make an incision dividing both skin and vein; the length of the incision should be about two fingers side by side; then

¹ This is the reading of M. The readings of the other MSS. point to some such meaning as 'the one which is lanced', but it is not clear why this particular vein should be so singled out.

Wroxeter, shows a supposed lancet not unlike this, the spike being guarded on either side, thus:



2. *Scalpel*—مبضع—the plain knife—could be used alternatively (see Chapter 46).

3. *Lancet*—المبضع النشل—*al-mibḍa' al-nashl*—a cutting or transfixing knife. This, shown in figure 184, may be called a lancet because the term conveys the idea of an edged instrument in contrast with the phlebotome, which was pointed rather than edged. Three types are shown, not greatly differing but

distinguished by varying names (olivary, myrtle, etc) and varying breadths. They are shown in the Huntington MS. only (figs. 182 and 183). These lancets may be connected with Antyllus' expression ἀνατείρειν—to pierce upwards. He explains that phlebotomy can be practised by piercing inwards or downwards—κατατείρειν—by driving the point straight into the vein downward, using the phlebotome; or by ἀνατείρειν, that is, transfixing the vein and cutting outward. The lancet would be the proper instrument for this. It is to be noted that they are given for opening the median and other veins in soft parts, where an in-driven point might injure an underlying nerve or artery.

القيفال وتسميه العامة عرق البدن والباسليق وهو الموضوع في الجانب
الإنسي ويسمى أيضا الإبطي وتسميه العامة عرق البطن وحبل الذراع
15 وهو الموضوع على الزند وهو الذي يلتصق⁶ فيه وهو الذي يظهر فوق
الإبهام ظهورا بيّنا والأسليم⁷ وهو العرق الذي بين الخنصر والبنصر
له شعبتان⁶

وفي الساق والرجل ثلاثة عروق أحدها الذي تحت مأبض الركبة
من الجانب الوحشي والثاني الصافن ومكانه عند الكعب من الجانب
20 الإنسي وعرق النسا ومكانه عند العقب من الجانب الوحشي، وفي الساق
الآخرى ثلاثة عروق مثلها⁶

فأما العرقان اللذان خلف الأذنين فمنفعة فصددهما للنزلات
المزمنة والشقيقة والسعفة وقروح الرأس الرديئة المزمنة، وكيفية فصددهما
على ما أصف وهو أن تحلق رأس العليل وتحك مؤخره في موضع
25 العرقين بخرقه خشنة حكا جيدا ثم يخنق العليل عنقه بعمامة حتى
تظهر العرقان وموضعهما خلف الأذنين في الموضعين المنخفضين من
الرأس فتفتشهما بأصبعك وحيث أحسست بنبضهما تحت أصبعك فهناك
فعلّم بالمداد ثم تأخذ مبضعا سكينية وهي التي تعرف بالنشل ثم
تدخلها تحت العرق في الجلد حتى تصل الموضع الى العظم ثم
30 ترفع يدك بالعرق والجلد الى فوق وتقطع العرق مع الجلد قطعاً
مبتورا ويكون طول القطع قدر اصبعين مضمومتين او نحوه وترسل من

H. والأسليم⁷. B. يبتضع S. مضع P. صصع M. 6.

draw off the quantity of blood you wish. Then bind them up with dressings and leave it until healed. The incision and cauterization of these two vessels has been discussed earlier in the book.

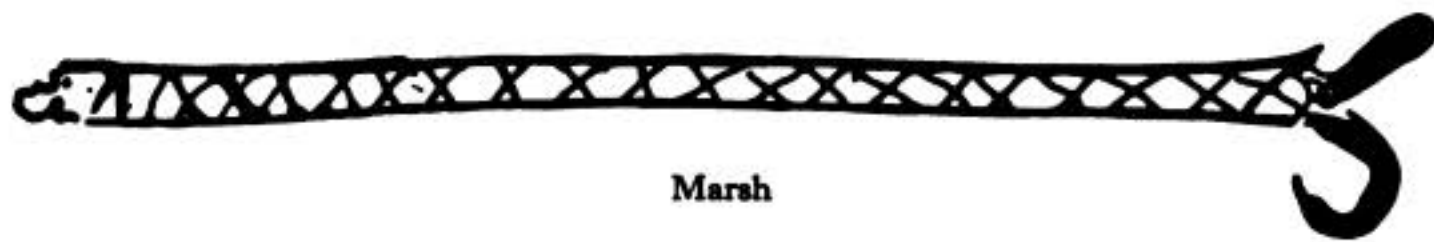
The section of the two arteries in the temples gives relief for chronic migraine and severe headache and constant ophthalmia and the flow of acrid superfluities into the eyes. Now the manner of incising them is as I shall describe: the patient should bind his neck with a sash until the vessels stand out clearly to the eye and their pulsation is manifest under your finger; then mark with ink. Then with your forefinger raise the skin over the vessel and introduce a lancet beneath and lift up the vein and divide it as you did the other two; and draw off as much blood as you need. Then loosen the band round the patient's neck and put your finger on the vein for a while; then apply cotton wool and a pad, bandage securely, and leave until it heals. They and their incision and extraction have been mentioned earlier in the book.

Venesection of the vein in the forehead is, after venesection of the cephalic, a relief to chronic diseases of the face such as pustules and scabs and erysipelas.¹ Now I shall relate to you the method of cutting: you bind the patient's neck until the vessel stands out; then you take the instrument called the 'pickaxe' (fig. 181). The spike in the head of the instrument you

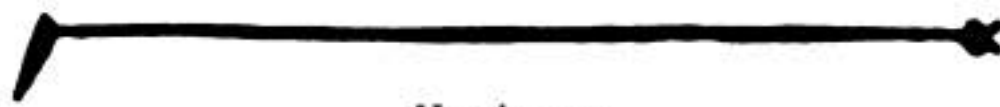
¹ Lit. 'the ugly redness'.

الدم القدر الذى تريد ثم تشدهما بالرفائد وتتركهما حتى تبرأ ، وقد
تقدم فى أول الكتاب قطعهما وكيهما ،

وأما الشريانان اللذان فى الصدغين فمنفعة فصددهما للشقيقة
35 المزمنة والصداع الصعب والرمد الدائم وسيلان الفضول الحادة المنصبة
الى العينين ، وكيفية فصددهما على ما أصف لك يشد العليل رقبته
بعمامة حتى تظهر العرقان للحس ظهورا بيئا ويتبين نبضهما تحت
أصبعك فحينئذ تعلم بالمداد ثم ترفع الجلد من أعلى العرق الى
فوق بأصبعك السبابة وتدخل الموضع النشل من أسفل وترفع العرق الى
40 فوق وتبتره كما صنعت فى العرقين الآخرين وترسل من الدم على قدر
حاجتك ثم تحل خناق العليل وتضع أصبعك على العرق ساعة ثم تضع
عليه قطنة ورفادة وتشد من فوق شدا وثيقا وتتركه حتى يبرأ ، وقد
تقدم ذكرهما وقطعهما وسلهما فى أول الكتاب ،
وأما فصد عرق الجبهة فمنفعته بعد فصد القيفال لعل الوجه
45 المزمنة كالسعة⁸ والقروح والحمرة السعجة ، وكيفية فصدده على ما أصف
لك يخنق العليل رقبته بعمامة حتى يظهر العرق ثم تأخذ الآلة التى
تسمى الفأس وهذه صورتها :



Marsh



Huntington

Fig. 181

8. AP, كالشقيقة HS, للسعة B, والسعة M, والسعة V.

place on the vessel itself and then strike with a comb or some similar thing; and let the blood flow to the extent you wish; then loosen the band round the neck and bandage the vein until healed. Sometimes it is opened with a broad scalpel; the scalpel, however, should not have a sharp point like other scalpels but should be a little broader at the tip, and the vein is cut obliquely, because the bone is close and the scalpel, if it is too fine, may be broken on it.

Venesection of the two lachrymal veins gives relief in diseases of the eyes such as granular conjunctiva¹ and inflammation and pannus, and in diseases of the face. Now this is the method of incising: the patient binds a sash round his throat, then you cut open both veins, standing in front of him. The incision should be oblique, slightly longitudinal, with a small, rather broad scalpel, for in this place there is no flesh; so if the knife have too narrow a point it may be broken on the bone. Then let flow what blood you wish, put cotton wool on both, tie for one night, then loosen.

Venesection of the vein of the nose helps in acute fevers, in violent headache, and in diseases of the face such as the red pustules that arise on the nose, especially if they are chronic.² This is how you make the incision: the patient binds his neck and then you hold his nose with your left hand and take a long fine scalpel and stick it in the middle of the very lobule of the nose, perpendicularly in the nasal septum (for the vein is not obvious at that spot) and blood will immediately flow out. You should advance the

¹ I.e. trachoma.

² M adds 'and for snorting (? or mouldering) of the nose and superfluous flesh there'.

تضع الشوكة الناتية التي في رأس الفأس على نفس العرق وتضرب
 من فوق بمشط أو شيء آخر في نحوه وتترك الدم يجري على القدر
 50 الذي تريد ثم تحل خناق العليل وتشده حتى يبرأ، وقد يفتح
 بمبضع عريض إلا أنه لا ينبغي أن يكون المبضع حاد الطرف كسائر
 المباضع بل يكون عريض الطرف قليلا وتقصده على التحريف لأن العظم
 قريب فرثما انكسر فيه المبضع اذا كان رقيقا،

فأما العرقان اللذان في ماقى العينين فنففعتهما لعل العين
 55 من الجرب والحمرة والسبل وأمراض الوجه، وأما كيفية قصدهما فهو
 أن يشد العليل رقبته بعمامة ثم تقصدهما وأنت واقف على رأسه
 وليكن الفصد على تحريف الى الطول قليلا بمبضع صغير عريض قليلا
 فإن الموضع لا لحم فيه فإنه إن كان المبضع رقيق الطرف فرثما انكسر،
 ثم ترسل من الدم حاجتك وتضع عليهما قطنة وتشدهما ليلة واحدة ثم
 60 تحلها،

وأما فصد عرق الأنف فنافع من الحمى الحادة والصداع الشديد
 ومن أمراض الوجه كالسفة الحمراء التي تعرض في الأنف ولا سيما
 اذا كانت مزمنة¹⁰، وكيفية قصده أن يشد العليل رقبته ثم تمسك أنفه
 بيدك اليسرى وتأخذ مبضعا رقيقا طويلا وتغرز في وسط الأنف
 65 نفسها بين حجز الأنف على استقامة لأن العرق لا يظهر للحس
 هناك فإن الدم يبرز¹¹ من ساعته، وينبغي أن تمن يدك بالمبضع

9. BP, 11. M. >ولسخر الانف واللحم الزايد فيه<. 10. HM. والسيل 9.

cett. يبدر

scalpel a little and cause the blood to flow as required; then bandage for one night, for it will quickly heal.

Venesection of the jugular veins helps tightness of breath and the early stage of elephantiasis, and the melancholic diseases arising on the surface of the skin, such as the black vitiligo and impetigo and malignant ulcers and cancrum oris. Now the way to venesect them is for the patient to bind his neck below them both with a band; let the operator stand behind the patient and let the patient be seated upon a chair. Then incise the vein longitudinally with a rather wide opening; then let a moderate amount of blood, or according to what you think necessary; then do the same with the other vein. Then loosen the band and tie the veins with a moderate pressure lest the patient be suffocated; leave him until the next day and the wound will be healed.

The four veins of the lips: venesection of them is effective, second to section of the cephalic vein, for pustules on the mouth and rotting of the gums and malignant ulcers and fissures of the lips and for malignant ulcer in the nose and round about. The way to venesect is to seat the patient in front of you and bind a sash round his neck, then roll back his lips and look for the two veins, one of which you will see to the left and the other to the right; their dark colour will show them up against the lip and also the fact that round them are fine dark veins; so cut down upon both, dividing them. But if you are in doubt about the matter and are not sure what they are, set about incising the largest and most obvious. Do the same with the two veins in the upper lip.

The two veins under the tongue: their venesection is, after section of the cephalic, of good effect in the quinsy arising in the throat from disease of the uvula, and diseases of the mouth. The way to venesect them is to

قليلا وترسل من الدم حاجتك ثم تربطه ليلة فإنه يتجبر سريعا ،
 وأما الودجان فمنفعة فصد هما لضيق النفس وابتداء الجذام
 والأمراض السوداء التي تعرض في سطح الجلد¹² مثل البهق الأسود
 70 والقوبا والقروح الرديئة والأواكل ، وكيفية فصد هما أن يشد العليل
 تحتها في عنقه برباط ويقف الصانع على رأس العليل والعليل قاعد
 على كرسي ثم تفصد العرق الى الطول فصدا واسعا قليلا ثم تخرج
 من الدم القدر المعتدل او على حسب ما تراه من الحاجة الى ذلك
 ثم تفعل كذلك بالعرق الآخر ثم تحل الرباط وتشد العرقين شدا
 75 متوسطا لئلا يختنق العليل وتتركه الى الغد فإنه يبرأ الجرح ،
 وأما عروق الجهارك فمنفعة فصد هما بعد فصد القيال أنه¹³ ينفع
 من القلاع في الفم وفساد اللثة والقروح الرديئة وشقاق الشفتين والقروح
 الرديئة التي تكون في الأنف وحواليه ، وكيفية فصد هما أن تقعد
 العليل أمامك وتشد رقبته بعمامة ثم تحوّل¹⁴ شفتيه وتنظر الى العرقين
 80 اللذين ترى أحدهما عن يمين الشفة والثاني عن يسارها وتستبين
 منها¹⁵ بسوادهما وذلك أيضا أن حواليهما عروقا رقاقا سودا فتقطعهما
 قطعاً مبتورا ، فإن أشكل عليك ولم تدر بما¹⁶ هي فاقصد الى قطع
 أكبرها وأبينها وكذلك فاصنع في العرقين اللذين في الشفة السفلى ،
 وأما العرقان اللذان تحت اللسان فمنفعة فصد هما بعد فصد
 85 القيال للخوانيق التي تكون في الحلق من¹⁷ مرض اللهاة وأمراض الفم ،

HV, تحرك. 14. cett. انها, P. انما. 13. cett. الجسم, BP, البدن, 12. V,

cett. و, 17. V, cett. ايهما, 16. H, cett. منهما, 15. B, M. تقبل

seat the patient before you in the sunlight and raise his tongue, and look, and you will see beneath the tongue one vein on each side, blackish in colour. Cut them; but be careful not to go too far in your incision, for beneath them lie arteries from which there may be haemorrhage.

The three veins that are opened in the elbow are the veins which universal custom has used for bloodletting. There are two ways of venesecting these: either by piercing with a broad myrtle-leaf scalpel or a rather fine olivary; or by cutting with a knife-edged scalpel, the lancet whose figure follows.

The broad myrtle-leaf scalpel (fig. 182).

As you see, it should be broad so as to serve for opening hollow, full, outstanding, obvious and thick veins, and those containing turbid blood.

The olivary scalpel (fig. 183). This scalpel is less broad and finer-pointed. It is suitable for venesecting fine veins that contain thin jaundiced blood.

The lancet (fig. 184). This is the lancet for making a slit. There are broad and narrow varieties of it according to the breadth or narrowness of

وكيفية فصدها أن تجلس العليل بين يديك بهذا الشمس وترفع
لسانه وتنظر تحت اللسان عن جانبه الواحد عرقا وعن جانبه الآخر
عرقا ولونهما الى السواد فتفصدهما وتحفظ لا تمنع في قطعهما فلان
تحتهما شريانات فرما عرض نرف دم من تلك الشريانات،

90 وأما العروق الثلاثة التي تفصد في المرفق فهي التي جرت
العادة بفصدها في الناس أجمع وفصدها يكون على وجهين إما غزا
بمضع ريحاني عريض او زيتوني الى الرقة وإما شقا بمضع سگينية
وهي النشل [وهذه صورتها]،

صورة المضع العريض الريحاني :



Fig. 182

Huntington

95 يكون عريضا كما ترى ليصلح لفتح العروق المجوفة المثلثة البارزة
الظاهرة الغلاظ والتي تحوى دما غليظا كدرا ،
وهذه صورة المضع الزيتوني :

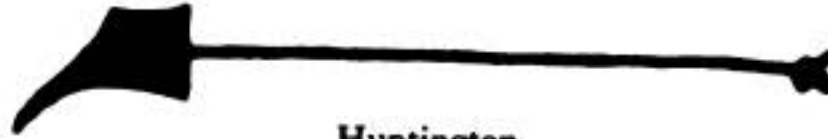


Fig. 183

Huntington

وهذا المضع أقل عرضا وأرق طرفا يصلح لفصد العروق الرقاق
التي تحوى دما رقيقا صفراويا ،
وهذه صورة المضع النشل : 100



Fig. 184

Huntington

هذا النشل الذي يصلح للشق ويكون منه أنواع عراض ورقاق على

the vein. This one indicates what the others are like; it is well known to surgeons.

The basilic vein, which is one of these three vessels, helps, when cut, by extracting blood from disorders below the throat and neck, in the parts neighbouring the chest and abdomen. When one venesections it one must be careful and wary of it, for beneath the vein is an artery, so that if one is inaccurate and sticks the scalpel in too far one will cut the artery and cause a haemorrhage; therefore venesection of it should not be done with a transfixing scalpel but should be an incision with the lancet. If the basilic vein is not clearly discernible, leave it and turn to another, or look for a branch of it; or venesection the brachial cord instead, for that is evident; incise it with the lancet as we have said. But if you wish to open the basilic vein itself you should, before you bandage the arm, palpate the place till the site of pulsation is found; then mark it with ink; then bind the arm and cut the vein obliquely with the lancet as we said, and take care that the stroke fall some way from the artery. If, when tying the bandage, you see a swelling in the place that you have marked with ink, that swelling is the inflation of the artery, so avoid it. And if, on section, you see the blood spurt out like a child's urine, and it is clear and red, then you may know that it is arterial blood; so then be quick and put your finger upon it for a long while; then remove your finger and if the bleeding stops, as it often will, then bind up the arm and leave it. Caution the patient against neglecting it; let him be careful and not move it for some days, until it heals. But if the bleeding is not stayed but resists your treatment and you have no medicament there at the time, then cut the vessel through if you can see it; for the two ends will contract and the haemorrhage will stop. Or else

حسب سعة العروق أيضا وضيقها وقد يستدل بهذا على غيره وهو
عند الصّناع مشهور،

وأما الباسليق الذى هو أحد هذه الثلاثة العروق فمنفعة فصدّه
105 أنه يجذب الدم من العلل التى تكون تحت الحلق والعنق ممّا يلى
الصدر والبطن، وينبغى للفاصد عند فصدّه أن يحذره ويكون على رقبة
منه فإن تحته شريانا فإن أخطأ وزاد فى غرز المبضع قطع ذلك
الشريان فيحدث نزف دم فلذلك ينبغى أن لا يكون فصدّه له بمبضع
الغرز بل يكون فصدّه شقّا بالنشل، فإن لم يظهر الباسليق ظهورا
110 بيّنا فينبغى أن تجتنبه وتعديل الى غيره او تطلب بعض شعبه او
تفصد مكانه حبل الذراع فإنه بيّن وتشقّه بالمبضع النشل كما قلنا فإن
أردت فصدّه بعينه فينبغى قبل شدّ الذراع أن تجسّ الموضع حتّى
تتعرف موضع النبض ثمّ تعلّم عليه بالمداد ثمّ تربط الذراع وتشقّ
العرق شقّا محرفا بالمبضع النشل كما قلنا وتحزى أن تقع الضربة
115 بالبعد عن موضع الشريان، ومتى رأيت عند شدّك الرباط نفخا فى
الموضع الذى كنت علّمت بالمداد فإنّ ذلك النفخ هو انتفاخ الشريان
فجنّبه، فإن رأيت الدم عند الفصد يشب كما يشب بول صبيّ وكان الدم
رقيقا أحمر فاعلم أنه من دم الشريان فحينئذ فبادر فضع أصبعك عليه
ساعة طويلة ثمّ انزع أصبعك فإن انقطع الدم فكثيرا ما ينقطع فشدّ
120 الذراع واتركه، وحذّر العليل من إهماله وليكن على رقبة ولا يحركه
أياما حتّى يبرأ، فإن لم ينقطع الدم وغلبك ولم يحضرك فى حينك
دواء فابتر الشريان إن ظهر اليك فإنّ طرفيه تنقلص وينقطع الدم، او

take a pistachio nut shell and split it and take one half and bind it over the site of the haemorrhage with a pad and bandage until next day. The bleeding may stop; if not, then treat by those means mentioned previously, namely the application of styptic powders. It is not difficult in most cases to stop the bleeding, because the wound is small and it is easy to bandage the arm. So get to know it.

Venesection of the median vein results in drawing off blood from the upper part of the head and the lower part of the body; this being due to the fact, as we said, that it is composed of a branch of the cephalic and a branch of the basilic veins. The venesector should be very careful in opening it because there is a nerve beneath; and if he takes the scalpel too deep and hits that nerve it will cause stupor, the healing of which will be difficult and perhaps even impossible. Generally this nerve can be felt, but if in some persons it lies hidden and is slender and not discernible, then you should make your venesection an incision with the lancet and diligently avoid the nerve. If the vein lies between two nerves you should cut it longitudinally.¹

The cephalic vein: section of it is effective in drawing blood from the head and in diseases of the eyes. Particularly in this vein you ought, if you wish to incise it, to make your incision by puncturing with the olivary or the broad myrtle-leaf scalpel, for this is the safest of all veins as there is neither artery nor nerve beneath. When you are cutting it you have only to avoid with the scalpel the head of the muscle and to look for the soft

¹ M adds 'The advantage of venesectioning the two *salvatellae*: the right is for diseases of the liver, the left for diseases of the spleen. As for the two *amlaj*, †they run† from beneath the hips, in the region of the two saphenae, to the inside of the knee. Venesection of them is beneficial for pains of the hips.' *amlaj* means 'yellowish-brown'; we have not succeeded in tracing it as an anatomical term.

خذ قشرة فستقة وشقها وخذ النصف الواحد وشده على موضع العرق
 شدا محكما بالرباط والرفائد الى يوم آخره فإن انقطع الدم وإلا
 125 فعالجه بما تقدم ذكره من وضع الذرورات القاطعة للنزف ، وقطع دمه
 ليس بالصعب في أكثر الأحوال لمكان صغر الجرح وتمكن الرباط في
 الذراع فاعلمه¹⁸

وأما العرق الأكل فمنفعة فصدء أنه يجذب الدم من أعلى
 الرأس وأسفل البدن لمكان أنه مرگب من شعبة من الباسليق وشعبة من
 130 القيغال كما قلنا ، وينبغي للغايد له أن يكون على رقبة من فصدء
 فإن تحته عصبا فإن زاد في غرز الموضع وأصاب العصب حدث فيها
 خدر يعسر بروءه وربما لم يبرأ أصلا ، وهذه العصبه كثيرا ما يظهر
 للحس ، فإن خفيت في بعض الناس وكانت رقيقة لا تتبين فينبغي
 أن تجعل فصدك إياه شقا بالنشل وتجنب العصبه جهداً فإن كان
 135 العرق بين عصبتين فشق العرق طولا ،¹⁹

وأما العرق القيغال فمنفعة فصدء أنه يجذب الدم من الرأس
 وينفع من أمراض العينين وينبغي في هذا العرق خاصة إن شئت أن
 تفصدء < أن تفصدء > غرزا بالمبضع الزيتوني أو بالمبضع العريض
 الريحاني لأنه أسلم العروق كلها لأنه ليس تحته شريان ولا عصب إلا
 140 أنه ينبغي لك عند الفصد أن تجنب بالمبضع رأس العضلة فقط

18. om. BM.

19. < وأما منفعه فصد الاسميين فالايمن لعل الكبد والايسر لعل

الطحال وأما الاملجين فنفعهما من تحت الوركين حانب العرقين

M. الصافينس الى داخل الركبه ومنفعه فصدء من اوجاع الوركين >

place. It will not injure it, if at the first cut you miss the vein, to repeat the incision several times; except that in some people it will sometimes swell up if the section is not made at the first stroke; nevertheless that swelling will do him no harm.

The manner of venesection, the accidents that may supervene, and the necessary preliminaries for performing it properly.¹ First you should know that venesection may be employed either for the preservation of health or in cases of disease. When used for the preservation and maintenance of health and for guarding against the occurrence of disease, the venesection should be in one of the three vessels at the elbow, cephalic, median, or basilic; and it must be performed at the beginning of spring when the signs of repletion appear. The venesection should be done on a Sunday or Tuesday, after three hours of the day have passed. On the other hand, venesection administered for diseases has no fixed hour but when need and necessity arise, either by night or by day, at any hour, in any season. Children should not be venesected until their fourteenth year,² nor should you venesect old men of over sixty years.

When anyone has decided to be bled, for whatever reason, first of all his bowels must be purged with a gentle enema if they contain much excrement, lest at the venesection putrid superfluities be drawn from the bowels into the veins, that might harm the chief parts of the body. No one suffering from indigestion or surfeit or drunkenness should be venesected

¹ BS make this the heading of Chapter 96; P, of Chapter 97.

² De Giunta's Latin edition of the Cremona version, 1520, adds here 'Nor is a pregnant woman venesected save from the fourth to the seventh month.'

وتطلب الموضع اللين، وليس يضره إن لم يصب بالضربة الأولى أن يعاد عليه بالفصد مرات إلا أنه ربما تورم في بعض الناس إذا لم يفصد في الضربة الأولى ولكن لا يضره ذلك الورم شيئاً،

وَأَمَّا²⁰ كَيْفِيَّةُ الْفُصْدِ وعوارضه وما ينبغي أن يتقدم في إصلاحه فأول¹⁴⁵ ذلك ينبغي أن تعلم أن الفصد⁽²¹⁾ إما أن⁽²²⁾ يستعمل في²³ حفظ الصحة فقط وإما أن يستعمل في الأمراض والذي يستعمل في²³ حفظ الصحة واستدامتها والتحرز من حدوث الأمراض أن²⁴ يكون الفصد في أحد العروق الثلاثة التي في المرفق أعنى القيفال والأكحل والباسليق وأن يكون الفصد في أول الربيع إذا ظهرت دلائل الامتلاء ويكون الفصد¹⁵⁰ في يوم الأحد أو يوم الثلاثاء بعد أن يمضي للنهار ثلاث ساعات، وأما الفصد الذي يستعمل في الأمراض فليس له وقت محدود ولكن متى دعت الحاجة والضرورة إليه من ليل أو نهار وفي كل ساعة وفي كل زمان، ولا ينبغي أن يفصد الصبيان حتى يأتي عليهم أربع عشرة سنة ولا يفصد الشيوخ الذين قد جاوزوا الستين سنة،

¹⁵⁵ فإذا أزمع أحد على الفصد لآتى وجهه كان فينبغي أن ينقى معاءه قبل الفصد بحقنة لينة إن كان فيه زيل كثير محتبس لئلا ينجذب إلى العروق عند الفصد من المعاء فضول عفنة تضر بالأعضاء الرئيسة، ولا يفصد المتوخم²⁵ ولا السكران ولا الثمل حتى يزول ذلك عنهم وليحذر

P. الفصل السابع والتسعون في BS، الفصل السادس والتسعون في. 20.

وان. 24. BM, om. cett. 23. BM, om. cett. 22. BM, om. cett. 21. V, انما cett.

P. المحموم HV s. p., S, المتحوم ABM, المتخوم. 25. HP.

until recovered from these; nor a dropsical patient. Beware also of venesection after stomach-trouble¹ or vomiting or diarrhoea or much intercourse or fatigue or exercise or sleeplessness or fasting and anything else that diminishes the strength both bodily and spiritual. Then, beforehand, see to the refining of the humours, if the blood be thick, by means of food and drink and medicines, if that is practicable for him. Then, if there is no contra-indication, let him enter the bath; or let him take a little exercise to make the blood thin. Then perform the venesection in the early part of the day, as we have said. Let him endeavour on that day to have his mind free from all such evil spiritual affections as anxiety, anger, or fear;² and from all bodily affections such as excessive fatigue and weariness and intercourse and the like. There should also be in the place where he is sitting such things as are customary for men to enjoy, such as various perfumes, aromatics, and music, and the like, as each one may. Then the venesector should sit on a cushion raised above the cushion of him whose vein is to be opened. Then let him stretch out his arm, and let the venesector chafe it two or three times with his hand; then he should bind a bandage round it by means of thongs twisted two or three times. The ligature should be moderately tight, for any other sort of ligature, be it too tight or too loose, will hinder the flow of blood. After putting on the tourniquet the patient about to be venesected should chafe his own hands together until the veins swell up and become obvious. Then the venesector should wipe over his knife with a little olive-oil, preferably old. Then he should place the forefinger³ of his left hand on the vessel itself below the place where he wishes to cut, lightly, so that the vein does not slip away and elude the stroke; for

¹ We have given this imprecise translation of *hayḍā* because the dictionary definitions of the word range from 'indigestion' through 'flux and vomit' to 'Cholera morbus'. It obviously did not have the specific bacteriological meaning of the word 'cholera' today.

² MV omit 'or fear'.

³ M reads 'thumb'.

الفصد أيضا بعقب الهیضة والقوى والخلفة والإكثار من الجماع والتعب
 160 والرياضة والسهر والصيام وكل ما يحل القوة من أمر جسماني أو
 نفساني²⁶ ثم تنظر في ترقيق الأخلاط قبل ذلك إن كان الدم غليظا
 بالأطعمة والأشربة والأدوية إن أمكنه ذلك، ثم يدخل الحمام إن لم
 يمنعه مانع أو يرتاض بعض الرياضة لكي يرق الدم وتجعل فصده في
 صدر النهار كما قلنا ويروم أن يخلو صدره ذلك النهار من جميع
 165 العوارض النفسانية الرديئة كالهجوم والغضب والخوف²⁷ ومن جميع
 العوارض الجسدانية كالتعب والنصب المفرطين والجماع ونحو ذلك،
 وتحضر مجلسه الأشياء التي قد جرى عادات الناس باستعمالها من
 ضروب الطيب والرياحين والملاهي ونحو ذلك كل إنسان على قدر
 170 ما يمكنه²⁸ ثم يقعد الفاصد على وسادة تكون أرفع من الوسادة التي
 يقعد عليه المفصود، ثم يخرج ذراعه ويحكه الفاصد بيده مرتين أو
 ثلاث ثم يشد الرباط بالشرك²⁹ ويلويها مرتين أو ثلاث وليكن الشد
 معتدلا لأن الشد متى كان غير معتدل إما بإفراط في الشد فيمنع
 جرى الدم وإما إن كان³⁰ إلى الاسترخاء³⁰ منع أيضا جرى الدم، ثم
 بعد الشد ينبغي أن يحك المفصود يديه جميعا ببعضهما ببعض حتى
 175 ينتفخ العروق وتبين للحس ثم يمسح الفاصد الموضع بيسير من الزيت
 العتيق خاصة ثم يضع³¹ أصبعه السبابة³¹ من اليد اليسرى على نفس
 العرق تحت الموضع الذي يريد فصده قليلا لكلا يلود العرق فيجنب

26. M. روحاني.

27. om. MV. 28. HP. تمكنه. an leg. 29. M, cett بالشركة.

30. V, M. ابهامه. 31. B. مسرخيا, P. مسرخا, M. مرخيا, AHS. الاسترخاء, 30. V,

there are some veins that you may find like cords¹ slipping away at venesection, while others are filled with flatus and when the knife is applied to them they contract under it and deceive the operator and the knife fails to open the vein or makes only a narrow opening. Wherefore it behoves the venesector to be firm and deliberate in all these cases. Then he should apply the knife and if the vein is opened first time, good; but if not, let him repeat a little lower down or a little above, quickly, if the place does not swell. If it does swell or the patient be anxious, then leave him for a day or two and do not bandage, for that might perhaps provoke an abscess; nor let him go to the bath. Then if he likes, let the venesection be repeated. If the knife has made an opening but it is small and the flow of blood is feeble and you fear that the amount of blood you require will not come out, then gently insert the knife again straight into the same opening and widen it a little. Do this speedily before the place swells up; for in many people the place swells up at once from a small opening. But if you see it swell up, on no account make another incision for it will be ineffectual; but apply to it a little lees of oil, for that will facilitate the flow of blood; it is superior in this situation to the oil itself and to all other unguents. Therefore use lees of oil in all cases of venesection when the flow of blood is hindered. The great theriac and *shakhzanāyā*² both have the same effect, for when the blood is thick it is rendered thin and running. If there occur a big tumour at the site of venesection, as often happens, especially with a man who has not previously undergone venesection or if the opening in the vein be small, then quickly apply to the place a sponge soaked in lukewarm salt and

¹ Or 'tendons'.

² Or *shakhzanāyā*; a lenitive compound medicament. See Dozy, I, p. 734, and Colin and Renaud, p. 125, no. 1162.

الضربة لأن من العروق ما تجدها كالوتر يلوز عند الفصد ومنها ما
هي مملوءة ريحا فتمى وضعت الموضع عليها انخفضت تحت الموضع
180 وخذعت الفاصد ولم يفتح الموضع العرق وإن فتحه فإنما يكون فتحه
ضيقا ، فلذلك ينبغي أن يتثبت الفاصد ويتأني في هذه الأمور كلها ،
ثم ينزل الموضع فإن فتح العرق من مرته تلك والّا فيعاوده مرة أخرى
تحت ذلك الموضع قليلا او فوقه بالعجلة إن لم يتورم الموضع ، فإن
تورم او جزع العليل فاتركه يوما او يومين ولا تشد الرباط فإنه ربما
185 جلب ورما حارّا ولا يدخل الحمام ، ثم يعاود الفصد إن أحب ، فإن
غرز الموضع وكان الفتح صغيرا وكان جرى الدم رقيقا وخشيت أن لا
يخرج من الدم القدر الذى تريد فأعد الموضع فى الثقب نفسه يرفق
على استقامة وزد فى الفتح قليلا وافعل ذلك بالعجلة قبل أن يتورم
الموضع فإن فى كثير من الناس قد يتورم الموضع عند الفتح الصغير
190 فإن رأيت أنه قد تورم فلا تعد عليه البتة فإنه لا يعينك شيئا وضع عليه
شيئا من عكار الزيت فإنه يسهل جرى الدم وهو أفضل فى هذا
الموضع من الزيت نفسه ومن سائر الأدهان وكذلك فاستعمل عكار
الزيت فى جميع فصدك للعروق عند تعذر جرى الدم وقد يفعل
ذلك الترياق الفاروق والشخزنايا³² اذا وضع من أحدهما على الموضع فإن
195 الدم يرق وينحل اذا كان غليظا ، فإن حدث فى موضع الفصد ورم
كبير فكثيرا ما يحدث ولا سيما لمن لم يفتصد³³ إلا تلك المرة او كان
فتح العرق صغيرا فبادر فضع على الورم إسفنجة مغموسة فى ماء وملح

P, والسحرى A, والشحرى A, والسجزنايا H, والسجزنايا B, والشخزنايا 32.

33. AHP, يفصد cett. M,V s. p. والشكرنايا

water and bandage it for a while, then it will go down. You should do this after the blood has gone out altogether from the same vessel or from another one.¹ If there remain after some days some discoloration or greenness at the site it will not hurt; if you like, apply some solution of myrrh and aloes, or juice of penny-royal or something similar.

Often in section of the basilic vein there occurs tumour and swelling. Put your hand upon it, and if you find that it sinks when pressed then it is a harmful swelling; be careful not to apply to it any of the things we have told you; for often arterial blood comes from it. But apply a poultice with some styptic qualities, to harden the place; then treat in the usual way until healed.

Now in each case you should extract blood in proportion to the person's strength and to the prevailing colour of the blood. If the blood be black, let it flow until it becomes red; in the same way, if you see it is thick, let it run until it is thin; and again, if it be sharp, until its sharpness is gone. In the case that is plethoric, robust, and requiring venesection just the once, the incision should be wide and the knife should be broad. And on the contrary for the debilitated person, in whose case you should venesect several times and the opening should be small. The best method in venesecting is if the incision be at an angle, oblique, cutting, not piercing. This manner of venesecting is safe from haemorrhage and from cutting the nerve; it is better and safer than cutting straight across or straight along.

To the patient who habitually faints during venesection you should give to eat beforehand a little bread macerated in the juice of unripe pomegranates or oxymel, if he be of a warm temperament; and draw off the blood in three or four instalments. And if he be of a cold temperament let him

¹ This somewhat obscure sentence presumably means 'do the same whatever vein you are opening'.

مدناً قليلاً وشده ساعة فإنه ينحل ، وينبغي أن تفعل ذلك بعد
 خروج الدم من العرق نفسه بكماله أو من عرق آخر، فإن بقي في
 200 الموضع بعد أيام شيء من السواد أو الخضرة³⁴ فإنه لا يضر ذلك، فإن
 أحببت فاحمل عليه شيئاً من الصبر والمر المحلولين أو شيئاً من عصارة
 الفودنج ونحوه،

وكثيراً ما يحدث ورم وتور عند فصد الباسليق فضع عليه يديك
 فإن وجدته يلطأ عند غمرك عليه فإن ذلك³⁵ تنو³⁵ سو³⁵ فاحذر أن تجعل
 205 عليه شيئاً مما ذكرنا فإنه ربما نزل منه دم شريان ولكن ضمه بما فيه
 قبض ليصلب الموضع ثم عالجه بسائر العلاج حتى يبرأ،

وينبغي أن تخرج لكل إنسان من الدم على قدر قوته وما يظهر
 من اللون الغالب على الدم فإنه إن كان الدم أسود فدعه يخرج
 حتى يحمر وكذلك إن رأيت غليظاً فأرسله حتى يرق وكذلك إن كان
 210 حاداً حتى تذهب حدته، وينبغي لمن كان مبتلياً قوياً واحتاج إلى
 إخراج الدم دفعة واحدة أن يوسع فصد العرق ويكون الموضع عريضاً
 ومن كان ضعيفاً فبالضد من ذلك³⁶ وينبغي أن³⁶ تخرجه في مرات وأن
 يكون الثقب ضيقاً، وأفضل ما يستعمل في فصد العرق أن يكون
 محرفاً مورياً شقاً لا غزاً، وهذا الضرب من الفصد سليم من النزف
 215 ومن قطع عصب وهو أحمد وأسلم من الفصد بالعرض والطول،

ومن كان يعتاده عند الفصد الغشي فينبغي أن تطعمه قبل
 الفصد شيئاً من خبز منعق في ماء الرمان المر أو السكجيين إن كان
 محروراً وأخرج له الدم في ثلاث مرات أو أربع فإن كان³⁷ مبرود المزاج³⁷

V. مبرود 37. MV. وان 36. M. سوشي 35. BPV. خضره 34.

take beforehand bread macerated in syrup of quinces or in aromatic syrup of honey or in fragrant syrup of basil.¹ If the patient faints during venesection and the cause is great loss of blood, then he should be given to drink meat-juice and thin syrup of basil; and he should perfume himself with *galia moschata*² and anoint his chest with it. And for the rest, use what we have spoken of in its place in the chapter dealing with fainting due to evacuation. As for him who wishes to ease his arm and draw off blood a second time, when he is undergoing the venesection on account of great evacuation and the lowness of his strength, you should let the blood slowly, in proportion to his strength, on successive days. For him who wishes to ease his arm and draw off blood a second time, being of robust body, it must be done seven or nine hours from the first venesection. He who wishes to draw blood from his body to the side opposite to that toward which it tends, should be eased on the second or third day.³

He who has abundant blood that has become hot and sharp and has produced fever should be bled at one time, and a large amount should be taken with a wide opening, until he faints (all the rules of venesection having been observed by you); but you should keep your finger on the pulse while the blood flows lest death take the place of fainting, for that often happens when the venesector is ignorant and there is carelessness. If you wish to loosen the arm and let blood a second time and you find that the opening of the vein is now closed up and the outflow of blood is difficult, you should not press hard upon it nor twist the arm violently, for that is very harmful. Either you must leave him a while and then bleed him again; or the clot of blood can be removed from the opening of the vein by using the blade of the scalpel, or by applying some salt dissolved in water; or apply some of the great theriac or *shakhzanāyā*; and put light pressure upon it until the blood comes out. But if the vein has begun to swell, leave

¹ According to James' *Cyclopaedia* this is *ocimum basilicum*.

² This is a compound of musk, ambergris, and wood of aloes.

³ This is far from clear. The verb 'it tends' is feminine in all the MSS., although the word for 'blood' is masculine.

فليأخذ قبل الفصد خبزا منقعا في شراب المية او في شراب العسل
 المطيب بالأفاويه او في الشراب الطيب الريحاني ، فإن حدث الغشى ²²⁰
 عند الفصد وكان سببه خروج الدم الكثير فينبغي أن يسقى ماء اللحم
 والشراب الريحاني الرقيق ويستعمل التطيب بالغالية ويلخلخ صدره بها
 ويستعمل سائر ما ذكرناه في التقسيم في باب الغشى الذي يكون من
 الاستفراغ ، وأما من أراد ترويح ذراعه وتسريح دمه ثانية فينبغي لمن ²²⁵
 كان فصد له لاستفراغ كثير وقوته ضعيفة أن تسرح الدم قليلا قليلا بقدر
 القوة في أيام متوالية ، وأما من كان يريد ترويح ذراعه وتسريح دمه
 ثانية وكان بدنه قويا فليعمل ذلك على سبع ساعات او تسع من فصد
 الأول ، وأما من أراد اجتذاب الدم من بدنه الى ضد الجهة التي
 مالت اليها فينبغي أن يريح له في اليوم الثاني او الثالث ،
 وأما من كان في بدنه الدم كثيرا قد سخن واحتد وأحدث ²³⁰
 حتى فينبغي أن تخرج منه الدم في دفعة واحدة وتخرج منه المقدار
 الكثير وتوسع الفتح الى أن يعرض الغشى بعد أن تكون متفقدًا
 لجميع شروط الفصد وأن تضع يدك على نبضه عند سيلان الدم لكلا
 يحدث الموت مكان الغشى فكثيرا ما يعرض ذلك اذا جهل الفاصد ²³⁵
 ووقعت الغفلة ، ولا ينبغي اذا أردت حل الذراع وتسريح الدم
 ثانية وقد انغلق فم العرق وعسر خروج الدم أن تغمز عليه بشدة او
 تلوى بقوة فإن ذلك ردي جدا بل إما أن تتركه حتى تفصده ثانية
 ولما أن تنحى بشفرة المبضع ما جمد من الدم في فم العرق او
 تحمل عليه شيئا من الملح قد حل في الماء او تحمل عليه شيئا من
 الترياق الفاروق او الشخزتايا وتغمزه غمزا رقيقا حتى يخرج الدم ، فإن ²⁴⁰

it and do not touch it until the swelling has subsided. And if you are unavoidably called to let blood again, venesect either above the place or in the other arm or another vessel.

Section of the cord of the arm: this is cut in place of the median and basilic veins when these are not to be found or are hidden; for this vein is composed of those two. The way to venesect it is for the patient to dip his hand in hot water until the forearm is red from the warmth and the vessel stands out distinctly. Then bandage a little above it with a moderate pressure, and then cut the vein a little obliquely, neither transversely nor longitudinally. The incision should be broad, and you should make the cut a little above the wrist. If the blood does not flow easily, have the hand again put into the vessel of hot water and let the blood flow into the water until you have extracted what is needed. If it be in the summer time you may be able to dispense with putting the hand back into the hot water; it is mainly in winter that you let the blood flow into hot water. Venesection of this vessel is safer than all others for beneath it there is neither artery nor nerve.

Section of the salvatella of the right hand is efficacious in case of diseases of the liver. The method of venesecting it is to tie a band round the wrist or grip it with your hand, after you have put it in hot water until the vein is swollen up and is plainly to be felt; then cut it somewhat obliquely; if you cut it right through that will not matter at all. But be careful not to go too far with the knife, for underneath there are the tendons of the fingers and the place is bare of flesh. Then put the hand again into hot water and let the blood flow; for if you do not put it into hot water again the blood will clot in the opening and will be prevented from flowing.

كان قد تورّم العرق فاتركه ولا تمسه حتى يسكن الورم ، فإن دعت
الضرورة الى تسريح الدم ثانية ولا بدّ فأما أن تفصده فوق ذلك
الموضع وأما أن تفصده في الذراع الآخر او في العرق الآخر،

وأما فصد جبل الذراع فيفصد عوضا من الأكل والباسلق اذا

245 لم يوجد ا او كانا خفيين لأنه مرّكب منهما ، وكيفية فصدّه أن يدخل
العليل يده في الماء الحارّ حتى يحمرّ الزند ويظهر العرق ظهورا
بيّنا ثم تشدّ فوقه بالرباط قليلا شدا متوسطا ثم تفصد العرق على
تحريف قليلا لا عرضا ولا طولا ولكن الفتح واسعا ويكون فصدك له
فوق مفصل اليد قليلا ، فإن تعدّر خروج الدم فاعد اليد في الإنا
250 بالماء الحارّ ودع الدم يجري في الماء حتى يبلغ حاجتك فإن كنت

في أيام الصيف فقد تستغنى عن إعادة اليد في الماء الحارّ وأكثر
ما يجعل جرى الدم في الماء الحارّ ففي³⁸ زمن الشتاء ، وفصد هذا
العرق أسلم من جميع العروق لأن ليس تحته عرق ضارب ولا عصبه
وأما فصد الأسليم من اليد اليمنى فهو نافع من علل الكبد

255 وكيفية فصدّه أن تشدّ معصم اليد بالرباط او بيدك بعد أن تدخله
في الماء الحارّ حتى ينتفخ العرق ويتبين للحسّ جدّا ثم تفصده

على تحريف قليلا وإن بترته بالكلّ لم يضرّه ذلك شيئا وتحفظ لا
تعمد يدك بالمبيض فإن تحته عصب الأصابع والموضع معرّى من اللحم
ثم تعيد اليد الى الماء الحارّ وتتركه يجرى الدم فيه فأنتك إن لم
260 تعدّها في الماء الحارّ جمد الدم في فم العرق وامتنع من الجرى

38. V, في cett.

When you have extracted the required quantity of blood, put oil and salt on the vein so that it does not heal too quickly. You should act thus with every narrow branch.

Incision of the salvatella of the left hand is of value in diseases of the spleen. Venesection of it should be carried out in the same manner as you did in the other.

Venesection of the saphena is beneficial in diseases of the lower part of the body, such as afflictions of the uterus and retention of the menses, and for diseases of the kidneys, and for chronic ulcers of the hips and legs, and similar diseases. Now the manner of venesection is for the patient to put his foot in hot water, then friction should be applied to it until the veins fill up; then bind a thong over the joint of the foot; then the site of the vein at the ankle is shown up running toward the big toe and forming many branches on the surface of the foot. Then make your incision either in the broadest branch or at the ankle before it ramifies, for that is better and safer. If you venesect it on the surface of the foot, be careful of the tendons that are beneath on the surface of the foot. Make the incision obliquely as though you were cutting the vein through. The knife should be a lancet. If the flow of blood be impeded, put the foot back again into hot water and let the blood flow out into it until it is evacuated.

If the venesector makes a mistake the first time in the vein to be cut, let him repeat the section a little higher up, for the place is safe; you need fear no mischief as long as you are careful of the tendons, as we said before. In the same way you may deal with the saphena of the other foot.

Now the position of the sciatic vein is, as we said, on the outside near the heel. Section of it is effective in pain in the hip when it arises from hot blood. The way to venesect it is to make the patient get into the bath. Then hasten and bandage his leg from the hip to a distance of four fingers above the heel, with a long narrow bandage; for only this will cause it to

فإذا أخرجت من الدم قدر الحاجة فضع على العرق دهنا وملحا لئلا
 يلتحم سريعا وكذلك ينبغي أن تفعل بكلّ شعبة ضيقة،
 وأما منفعة فصدّه من اليد اليسرى فإنه نافع لعلل الطحال
 وكذلك تفعل في فصدّه كما فعلت في الثاني³⁹ سواء،
 265 وأما فصد الصافن فمفئته للأمراض التي في أسفل البدن مثل
 علل الأرحام واحتباس الطمث وأمراض الكلى وقروح الفخذين والساقين
 المزمنة ونحوها من الأمراض، وكيفية فصدّه أن يدخل رجله في الماء
 الحارّ ويحمل عليه ذلك حتى تدرّ العروق ثمّ تشدّ فوق مفصل الرجل
 بالشركة والعرق موضعه عند الكعب ظاهر نحو الإبهام ويتشعب منه
 270 في وجه الرجل شعب كثيرة فافصدّه في أوسع شعبة منه أو عند
 الكعب عند مجتمعه فهو أفضل وأسلم، فإن فصدته في وجه الرجل
 فتحفظ من الأعصاب التي تحته على وجه الرجل واجعل فصدك له
 بتحريف كأنك تريد بتره ويكون الموضع نشلا، فإن تعدّرت خروج الدم
 فليعدّ رجله في الماء الحارّ واترك الدم يجري فيه حتى يفرغ،
 275 فإن أخطأ الفاصد العرق بالفصد في أول مرة فليعدّ بالفصد
 إلى فوق قليلا فإنّ الموضع سالم لا يخشى منه غائلة اذا تحفظت من
 العصب كما قلنا وكذلك تفعل بالشافن من الرجل الأخرى سواء،
 وأما عرق النسا فمكانه كما قلنا عند العقب من الجانب الوحشي
 ومنفعة فصدّه لوجع الورك اذا كان ذلك من قبل الدم الحارّ وكيفية
 280 فصدّه أن تدخل العليل الحمام وتسرع وتشدّ ساقه من لدن الورك إلى
 فوق الكعب بأربع أصابع بعمامة رقيقة طويلة فإنه لا يظهر إلا بذلك،

B. الثاني المتقدم، V. الباقي. 39.

appear. When it has appeared then open it in whatever way you can; at an angle, which is best, or right through, or only cut it open, for it is a safe place. But in many people it is very hard to find; and if you do not find it or it is in no way palpable, then venesect one of its branches, which will be seen on the surface of the foot towards the fourth toe and the little toe. Be careful of the tendons, and let the amount of blood you require. Then loosen the bandage and apply cotton wool to the site of the section and bandage the place; it will heal quickly.

فإذا ظهر فافصده على أى حالة أمكنك إما على تحريف وهو أفضل
وإما أن تبتره بترًا أو تشقه شقًا فإن موضعه سالم، وهو في أكثر
الناس خفي جدًا فإن لم تجده ولم يظهر للحس البتة فافصد بعض
285 شعبه وهي التي تظهر في ظهر القدم نحو⁴⁰ الخنصر والبنصر وتحفظ
من الأعصاب وأرسل من الدم القدر الذي تريد ثم حل الشد وضع
على موضع الفصد قطنه وشد الموضع فإنه سريعًا ما يبرأ،

M. بين 40.

CHAPTER NINETY-SIX.¹ On cupping and the manner of employing it.

Cupping-vessels are made of horn, wood, bronze, or glass. Cupping is carried out in two ways: one with scarification and drawing blood, and the other without scarification. The latter, cupping without scarification, may be carried out in two ways: with fire and without fire.

The points at which cupping with scarification and extraction of blood is performed are fourteen places in the body: the occiput, which is the back of the head; the interscapular region, which is the middle of the back of the neck²; the two sides of the neck, equally on both sides; the chin, that is, beneath the lower jaw; the two shoulders; the coccyx, at the base of the tail; the antibrachium, the middle of the forearms; the two legs; and the two heel-veins.

What cupping does is to draw blood out of the fine vessels dispersed over the flesh; for this reason it does not cause the strength to decline as does venesection; nor may you use cupping, either with fire or without fire, in any disease due to plethora, until the whole body has been evacuated. If disease or custom prescribe cupping we may apply it at any hour, at the beginning or end or middle of the month, at whatever time it may be. For there are some people who, when there is an abundance of blood in them, so as to need cupping, feel heaviness and pain in the head. Some find they have a fullness and redness of the face and also of the head and neck; some have an itching in their face and forehead and a dimness and irritation in

¹ B makes this Chapter 97; P, Chapter 98.

² It will be seen that *qafā'* means a place rather lower than the back of the neck, which is its dictionary equivalent.

BOOK TWO. CHAPTER NINETY-SIX

Cupping-vessels — *مهاجم* — *mahājim* — are shown and briefly described earlier (chapter 46). They are to be made of bronze or *ṣini*, which may mean 'Chinese alloy' or 'china-ware'; round in section cross-wise; somewhat elongated lengthwise. The Huntington drawings are clear. The single Marsh drawing must indicate a large-size vessel with ornamentation. There is nothing new in either the form or the use of these vessels. But no other author describes the very small ones that Albucasis speaks of as being like nutshells; but unfortunately he does not say what

material they were made of nor how suction was obtained. It seems likely that the vessels shown in chapter 46 are common earthenware. But in this chapter we have representations of vessels specified as of bronze. Here also the manner of securing suction is given. The vessel has a bar across the open end to which some combustible material is fixed. On lighting it the air in the vessel is heated and, under the pressure, is allowed to escape through a pin-hole in the metal wall. Then a finger is put over the hole and as it cools rapidly a moderate vacuum is obtained.

الفصل السادس¹ والتسعون في الحجامة وكيفية استعمالها

المحاجم قد تكون من القرون ومن الخشب ومن النحاس ومن الزجاج ، والحجامة تكون على وجهين أحدهما الحجامة بالشرط وإخراج الدم والآخر الحجامة بلا شرط وهذه الحجامة التي بلا شرط تكون على وجهين إما أن تكون بنار وإما أن تكون بغير نار، والمحاجم التي تستعمل بالشرط وإخراج الدم لها أربعة عشر موضعا من الجسم أحدها محاجم النقرة وهو مؤخر الرأس، والكاهل وهو وسط القفا، ومحاجم الأذعين وهما صفحتا العنق من الجهتين جميعا، ومحاجم الذقن وهو تحت الفك الأسفل من الفم، ومحاجم الكتفين، ومحاجم العصص على عجز الذنب، ومحاجم الزنديين وهما وسط الذراعين، ومحاجم الساقين، ومحاجم العرقوبين²، والحجامة إنما يجتذب الدم من العروق الرقاق المبتوثة في اللحم ومن أجل ذلك لا تسقط القوة إسقاط الفصد ولا ينبغي أن تستعمل الحجامة بنار كانت أو بغير نار في أحد الأمراض التي تكون من الامتلاء حتى يستفرغ البدن كله، فإن دعت الحاجة إلى الحجامة من مرض أو من قبل العادة استعملناها في كل وقت في أول الشهر وفي آخره وفي وسطه وفي أي زمان كان، وذلك أن من الناس من إذا كثر فيه الدم حتى يحتاج إلى إخراجه بالحجامة يجد في رأسه ثقلا وصداعا ومنهم من يجد امتلاء وحمرة في وجهه ورأسه ورقبته ومنهم من يجد حككا في وجهه وجنبه وظلمة وأكالا في عينيه

1. A. الترقوتين. 2. P. الثامن، B. السابع.

their eyes. There are some who scratch the places where the cupping-vessels are applied; some laugh¹ immoderately; some find a taste of blood in the mouth, and the gums swell up and they spit blood; some sleep overmuch; some frequently dream of seeing blood and redness and murdered men and wounds and the like. So when we see anything of this kind, and especially if it be in the middle third of the month, we thereupon prescribe cupping after the second or third hour of the day has passed.

The effect of cupping the nape of the neck is to help in heaviness of the head and in a fluxion of humours into the eyes; but it should be done after a complete evacuation of the body. This use of cupping may take the place of venesection of the cephalic vein. But anyone suffering from coldness of the brain or catarrh should beware of using it, for this will cause serious harm. So it should not be employed on old men or on anyone suffering from a cold disease of the head. If anyone becomes addicted to it it brings about oblivion. You should therefore bid the cupper bring the cupping-vessel a little lower down lest oblivion supervene.

Now as to the application of cupping-vessels to the interscapular region: it is instead of venesection of the median and basilic veins; so it is effective for asthma and dyspnoea and for rupture of the organ of respiration, and for cough and plethora. The cupping of the interscapular region should be made a little high, for if it is too low it will bring about weakness of the heart and stomach.

Cupping the sides of the neck helps in pains occurring in the head, oph-

¹ A reads 'quarrel'.

Both MSS. show similar examples of this (fig. 185). The plain vessel without cross-piece is shown by the Huntington MS. only (fig. 186) as used filled with water. How suction was obtained we are not told.

These cups are the counterpart, though not copies, of the Greek *σικύα* and Roman *cucurbitula*. How early the use of cupping vessels must have been may be gathered from the red-figure vase in the British Museum

(no. 529) depicting the activities of an *ιατρείον* with *σικύαι* hanging on the walls. These vessels also appear on the coins of Cos (birthplace of Hippocrates) and of Epidaurus, as early as 300 B.C. Celsus gives the earliest fully instructive account (II. 11). Paulus (VI. 41) no doubt supplied much of the substance of this present chapter. But the water-filled cup seems peculiar to the Arabs.

ومنهم من يحك موضع محاجمه ومنهم من يكثر ضحكه³ ومنهم من يجد
 طعم الدم في فمه وترم لثاته ويتبرق⁴ الدم ومنهم من يكثر نومه ومنهم
 من يرى في نومه الدم والحمرة والقتلا⁵ والجراحات وما أشبه ذلك،
 فمتى رأينا شيئا من ذلك وبخاصة إن كان في الثلث الأوسط من
 الشهر أمرنا عند ذلك بالحجامة بعد ما يعصى من النهار ساعتان أو
 ثلاث،

وأما منفعة حجمة النقرة فإنها تنفع من الثقل في الرأس وما
 ينصب إلى العينين ولكن ينبغي أن يكون ذلك بعد استفرغ جمة
 البدن وهذه الحجامة قد تكون عوضا من فصد القيال ويحذر أن
 يستعملها من كان بارد الدماغ⁶ أو كان به نزلة فإنها تضره ضررا
 عظيما ولذلك لا ينبغي أن يستعملها الشيوخ ومن في رأسه أمراض
 باردة، ومن أدمن عليها ولدت عليه النسيان⁷ ولذلك ينبغي أن تأمر
 الحجام أن ينزل يده بالمحجمة قليلا إلى أسفل خوفا من تولد
 النسيان،

وأما حجمة الكاهل فهي عوض من فصد الأكحل وفصد الباسليق
 ولذلك تنفع من الربو وضيق النفس وانصداع آلة التنفس والسعال
 والامتلاء، وينبغي أن ترفع حجمة الكاهل قليلا لأنها إن صيرت
 إلى أسفل ولدت ضعفا في القلب والمعدة،
 وأما حجمة الأخدعين فتتفع من الأوجاع الحادثة في الرأس

BV. والقتلى. 5. AHs. p. ويتنزف M, ويبصق B, ويبرق 4. A. محكه 3.
 B. «وكسرت الوجه وتسرع بنبات الشيب وتنثر الفم». 7. P. المزاج 6.

thalmia, migraine, and in quinsy and in pain at the roots of the teeth; it replaces venesection of the basilic vein. And you should bid the cupper not to scarify very deeply lest he cut an artery and cause haemorrhage.¹

The application of cupping under the chin helps against ulcers in the mouth and corruption of the gums and similar diseases of the mouth; and may replace venesection of the four labial vessels.

The application of cupping to the shoulders helps in palpitation of the heart arising from plethora and heat.

The application of cupping to the inside of the forearms helps in place of venesection of the three veins, namely the basilic, median, and cephalic; for it draws blood from all the capillaries of the flesh. These capillaries draw blood from other larger veins till the drawing reaches those three great veins. You should bid the person who applies the vessels not to scarify deeply; for the place is bare of flesh and there are tendons and arteries beneath.

The application of a single cupping-vessel to the coccyx is effective for haemorrhoids of the anus and ulcers of the lower abdomen.² You must tell

¹ P adds 'and fainting and sometimes death'.

² M adds 'and haemorrhage resulting from dysentery, swelling of the posterior from menstrual bleeding, blood in the urine, inflammation of the kidneys, heat in the urine, swelling of the testicles from putrescent blood, foetor and irritation of the pudenda, and boils and scabs on the buttocks. If employed in case of need it is not deleterious to sexual intercourse; but when employed unnecessarily it weakens the back and debilitates the kidneys, emaciating the fat of them, and it impairs the sexual powers'.

40 والرمد والشقيقة والخناق والتوجع في أصول الأسنان وهي عوض من
فصد الباسليق، وينبغي أن تأمر الحجام أن لا يعمق يده بالشرط
لئلا يقطع شرياناً فيحدث النزف،

وأما الحجامة تحت الدقن فتتفع من القلاع في الفم وفساد اللثة
ونحوها من الأمراض التي في الفم وقد تقوم مقام فصد الجهارك التي
45 في الشفتين،

وأما حجمة الكتفين فتتفع من الخفقان الذي يكون من الامتلاء
والحرارة،

وأما حجمة بطنى الزنديين فتتفع⁹ مما ينفع⁹ فصد العروق الثلاثة
الباسليق والأكل والقيفال لأنها تجتذب الدم من جميع تلك العروق
50 الرقاق التي في اللحم وتجتذب تلك العروق الرقاق من عروق آخر
أغلظ منها حتى يبلغ الجذب الى العروق الغلاظ الثلاثة وينبغي أن
تأمر الحجام أن لا يعمق في الشرط لأن الموضع معرّى من اللحم
وتحته أعصاب وشريانات،

وأما المحجمة الواحدة التي تحجم على العصعص فإنها تتفع من
55 بواسير المقعدة وقروح الأسفل¹⁰ وينبغي أن تأمر الحجام أن تكون

وسيلان 10. cett. من 9. MP. P. <والغشى وربما أحدث الموت> 8.
الدم من الزحير وورم المقعدة من نزف الحيض وبول الدم وحراره الكلا
وحرقة البول وورم الانشيين من الدم الفاسد ومن نتن الفرج والحكة فيه
ومن الدماميل والجرب في الآليه وليس تضر بالباه اذا استعملت عند
الحاجه ومتي استعملت من غير حاحه اضعفت الظهر وانهكت الكلبي
M. ودويت سحمها ونقصت من الباه<

the cupper that the cupping-vessel should be large and of bronze, for the place requires strong suction, and a glass cupping-vessel may break; and he should scarify deeply.

Cupping applied to both legs reduces plethora manifestly, because it draws off blood from the whole body, and so is beneficial for chronic pains in the kidneys and uterus and bladder; and brings on the menses. It also serves for pustules and boils; and takes the place of venesection of the saphenous veins and the heel-veins. But it greatly exhausts the body and causes fainting in most people.

The advantage of cupping of the heel-veins is much the same as that of the legs.

The way to apply the cupping-vessels:¹ the vessel is first put in position empty; then you suck moderately; do not long hold the cupping-vessel in place, but apply it quickly and remove it quickly so that the humours gather evenly at the place; and go on doing it time after time until the place is seen to redden and to swell, and the redness of blood is manifested. Then scarify, and repeat the suction very gently; then consider the bodily condition. The person who is tender of flesh and porous of skin you should scarify once only, not more, lest the place ulcerate. Tell him who applies the cupping-vessels to scarify rather widely and deeply, and to control the suction with gentleness and a delicate motion. If there be a thickness of the blood he should scarify twice; the first time to make a way out for the thinner blood and serum; and the second time to complete the extraction of the thick blood. If the blood be very turbid let him scarify a third

¹ P makes this a new chapter-heading, chapter 99.

المحجمة كبيرة وأن تكون من نحاس لأن الموضع يحتاج الى مَصّ قوى
وربما انكسرت محجمة الزجاج ويشترط شرطا كثيرا ،
وأما محاجم الساقين فتتقص الامتلاء نقصانا بينا لأنها تجتذب
الدم من جميع الجسم وتنفع من الأوجاع المزمنة فى الكلى والأرحام
60 والمثانة وتدرّ الطمث وتنفع من البثور والدمايل وتقوم مقام فصد
الصابنين والعرقوبين إلا أنها تنهك البدن كثيرا ويحدث الغشى فى
أكثر الناس ،

ومحاجم العرقوبين منفعتها قريبة من منفعة حجامه الساقين ،
كيفية "وضع المحاجم وهو أن توضع المحجمة أولا فارغة وتَمَصّ
65 مَصّا معتدلا ولا تطيل وضع المحاجم ولكّك تضعها سريعا وتنزعها
سريعا لتقبل الأخلاط الى الموضع إقبالا مستويا ولا تزال تكرر ذلك
وتواليه حتى ترى الموضع قد احمرّ وانفتح وظهرت حمرة الدم فحينئذ
تشرط وتعاود المَصّ رويدا رويدا ثم تنظر فى حال الأبدان ، فمن كان
من الناس رخص اللحم متخلخل المسام فينبغى أن تشرطه واحدة لا
70 غير لثلا يتقرّح الموضع وتأمّر الحجام أن يوسّع الشرط ويعمق قليلا
ويعدّل المَصّ فى رفق وتحريك لطيف ، فإن كان فى الدم غلظ
فينبغى أن يشرط مرتين أما فى المرّة الأولى فليفتح طريقا للطيف الدم
ومائته وأما فى الثانية فلاستقصا إخراج الدم الغليظ ، فإن كان
الدم عكرا جدّا فيكرر¹² الشرط مرّة ثالثة ليبلغ الغاية ، وبالجملة اذا

cett. فيكون BP, 12. P. الفصل التاسع والتسعون فى كيفية 11.

time for completion. In general, one scarification is enough when we wish to draw a little thick blood; but if we wish to draw much blood we make more scarifications. If we judge that the blood is thick we should scarify deeply. A fair depth for the scarification is the thickness of the skin, and no more.

The oils and water to be used in applying cupping-vessels, and what he who is to be cupped should avoid.¹ He whose skin is thick, solid, desiccated, and narrow of pore: the operator should anoint the place with opening and emollient and resolving oils; if it be in the summer season, with, for example, oil of yellow gilliflower or of violets or of sweet almonds or of pumpkin-seeds. If it be in winter, with narcissus oil or oil of lilies or camomile oil, or of jasmine, or the like. And if the superfluity be thick and cold, then with oil of marjoram or oil of wild thyme or oil of ben² or oil of dill. If he who is to be cupped has wide-open pores and tender flesh, he should be forbidden oil. After cupping, such people should wash the sites with rose-water or cold water or water of black nightshade or of gourds or of garden purslain, or the like. But he whose blood is very humid should wash the sites of his cupping with vinegar or water of myrtle or sumac, and the like. He that has thick superfluities should wash the sites of his cupping with old wine or water of purslain or decoction of dill or of camomile or the like. One should beware of cupping in the bath or just after the bath, but should use the vessels one or two hours after leaving the bath. And no one should sleep after cupping.

¹ B and P make this the start of a new chapter, 98 and 100 respectively. HP here add 'the measures to be taken before and after cupping by him who is to be cupped and him who is to be venesected; cupping without scarification and cupping with fire'.

² *bdn*, the Egyptian willow, *Moringa arabica*.

75 أردنا أن نخرج دما قليلا اكفينا بشرطة واحدة فإن أردنا إخراج دم كثير شرطنا شرطا أكثر، وإن قدرنا أن الدم غليظ فينبغي أن ن شرط شرطا عميقا والحد المعتدل في الشرط عمق الجلد فقط،

ما¹³ ينبغي أن يستعمل من الأدهان عند وضع المحاجم ومن المياه وما يحذره المحتجم¹⁴، أما من كان جلده غليظا صلبا قحلا 80 ومسامه ضيقة فينبغي أن تدفن مواضع المحاجم بأدهان مفتحة مليئة محللة أما إن كان في زمان الصيف فمثل دهن الخيري أو دهن البنفسج أو دهن اللوز الحلو أو دهن حب القرع، وأما إن كان في الشتاء فمثل دهن النرجس أو دهن السوسن أو دهن البابونج أو الزنبق ونحوه، فإن كانت الفضلة غليظة باردة فليكن الدهن دهن 85 المرزنجوش أو دهن النعناع أو دهن البان أو دهن الشبث ونحوها، فإن كان المحتجم واسع المسام غش اللحم فينبغي أن يمتنع الدهن وهؤلاء ينبغي أن يغسلوا محاجمهم بعد الحجامة بما¹⁵ الورد أو بما¹⁶ بارد أو بما¹⁷ غلب أو بما¹⁸ القرع أو بما¹⁹ الرجل ونحوها، وأما من كان دمه كثير الرطوبة فيغسل محاجمه بالخل أو بماء الآس 90 والسماق²⁰ ونحوها، وأما من كانت فضوله غليظة فيغسل محاجمه بالشراب العتيق أو بما²¹ المرزنجوش أو طبخ الشبث أو البابونج ونحوها،

وينبغي أن تحذر الحجامة في الحمام وفي إثر الحمام بل ينبغي أن

P. الفصل الموفى ما به فيما B. الفصل الثامن والتسعون فيما 13.

وما ينبغي أن يدبر به المحتجم والمفتصد قبل الحجامة وبعدها 14.

HP. والمحاجم التي تكون بلا شرط والمحنة التي تستعمل بالنار <

P. والسلق 15.

The correct procedure to be observed before and after cupping by him who is to be cupped or venesected. It is necessary for you first to consider, and if he that is to be cupped or venesected be bilious, and bitterness and inflammation prevail in his blood, he should take cooling things such as pomegranates and endive with vinegar and lettuce and oxymel and julep, and the like. His diet should be chicken and mutton made into stews with vinegar, and soups with verjuice, and the like. The man of frigid constitution should drink syrup of honey or syrup of quince or spiced oxymel; he should also take perfumed raisin wine, not too old and not too new; he should be bidden to be moderate in eating and should make his diet young pullets and larks and sparrows and young pigeons in white stews. And on the day of cupping and venesection he should drink rather than eat. It may sometimes be necessary to have some people drink the great theriac or musk-medicine or *shilitha*¹ before cupping and before or after venesection, to strengthen the chief parts and to render the blood thin; but these draughts should not be given to the feverish.

Cupping without scarification is the cupping practised on the liver, the spleen, the breasts, the belly, the umbilicus, the region of the kidneys and the acetabulum of the femur; for these parts do not tolerate scarification.

Now the purpose of the vessels is either to draw blood from one part to

¹ A compound medicine. The vocalisation is uncertain.

تستعمل بعد الخروج من الحمام ساعة او ساعتين ولا ينبغي أن
ينام أحد بعد الحجامة،

95 ما ينبغي أن يدبر به المحتجم والمفتصد قبل الحجامة وبعدها،
يجب أن تنظر أولاً فلن كان المحتجم او المفتصد صفراوياً والغالب
على دمه الحدة والالتهاب فينبغي أن يأخذ المبردات كالرمان
والهندباء بالخل والخس والسكجيين والجلاب ونحوها ويجعل أطعمته
الفراريج ولحوم الضأن سكباجات والحصرميات ونحوها، ومن كان
100 مزاجه باردا فينبغي أن يسقى شراب العسل وشراب المية او
السكجيين البزورى ويتناول النبيذ العطرى المتوسط الذى هو فيما
بين القديم والحديث ويؤمر بقلّة الغذاء ويجعل غذاءه الفراريج
والقنابر والعصافير وفراخ الحمام اسفيداجات، وينبغي أن يكون
الشراب يوم الحجامة والفصد أكثر من الطعام، وقد ينبغي أن يسقى
105 فى بعض الأوقات لبعض الناس من الترياق الفاروق او دواء المسك
او الشيلثا¹⁶ قبل الحجامة وقبل الفصد او بعده لتقوى الأعضاء الرئيسة
وترقق الدم ولا ينبغي أن يسقاه المحرورون،

وأما المحاجم التى تكون بلا شرط فهى المحاجم التى توضع على
الكبد والطحال والثديين وعلى¹⁷ البطن والسرّة وموضع الكلى وحقّ الورك
110 لأنّ هذه الأعضاء لا تحتل الشرط عليها،
ولأنّما يراد بها إمّا جذب الدم من عضو الى عضو كوضعنا

AMV. وعلل 17. M. الشليثا، P. السليا، A. الشنلثا 16.

another, as when we apply cups over the breasts in the case of nose-bleed; or to loosen from the part a frigid vapour that has become fixed in it, as when we place cupping-vessels on the abdomen and umbilicus; for they stimulate the part and warm it and remove the pain because they loosen the vapour. Sometimes they are applied over the kidneys when there is an obstruction or stones in them; for often, by virtue of their drawing, the obstruction is opened up or the stones are dislodged from their site. They act in the same way when they are applied over the liver and the spleen when flatus is permeating them. These cupping-vessels may be used empty with suction only; or they may be used with fire. Sometimes in pleuritic complaints they are applied filled with tepid water. This is done by filling the vessel, which should be large, with plain hot water, or with hot water in which suitable herbs have been boiled. Then it is applied to the place, full, and held there, then removed; and the process repeated as often as is necessary.

This is the figure of the cupping-vessel for use with fire (fig. 185). Its

المحجمة على الشدين في علة الرعاف او نستعملها لنحل عن العضو
ريحا باردا قد لحج في العضو كوضعنا المحجمة على البطن والسرة
فإنها تخلخل العضو وتسخنه وتذهب بالوجع لتحليلها ذلك الريح ،
115 وقد توضع على الكلى اذا عرض فيها سدة او حصي فبقوة جذبها ربما
فتحت السدة او قلعت الحصي من موضعها ، وكذلك تفعل اذا وضعت
على الكبد والطحال عند ريح يرتبك فيهما ، وهذه المحاجم قد
تستعمل فارغة بالمص فقط وقد تستعمل بالنار وقد تستعمل مملوءة
بالماء الفاتر في علل الشوصة وذلك أن تملأ المحجمة ولتكن كبيرة
120 بالماء الحار وحده او بما قد طبخ فيه بعض الحشائش التي تصلح
لذلك ، ثم توضع مملوءة على الموضع وتمسك وتزال وتعاد مرات على
قدر الحاجة ،

وهذه صورة المحجمة التي تستعمل بالنار :

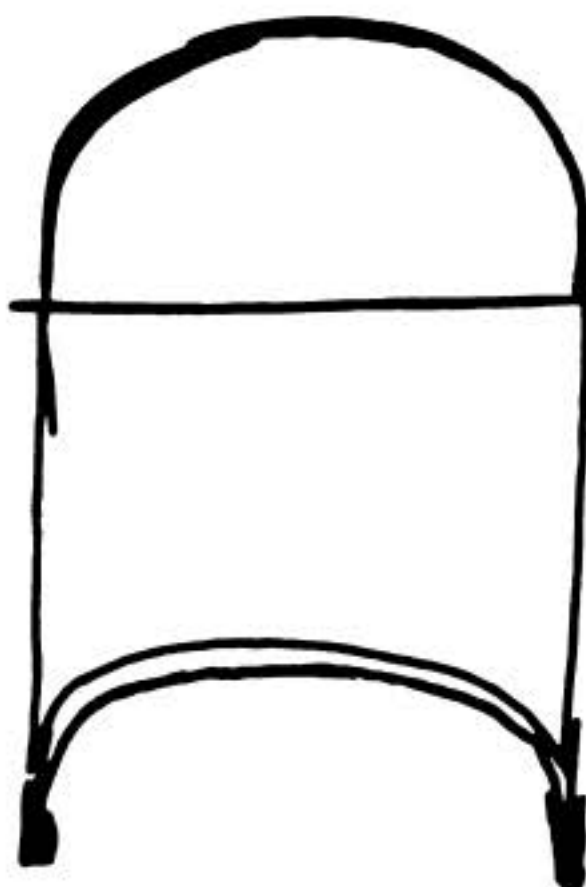


Fig. 185

Marsh

mouth should be the width of two opened fingers, as we have illustrated; the depth should be half a span; and in the side about halfway down there should be a small hole of a size to admit a needle. It should be made of Chinese bronze or of brass. The edge should be thick, smooth, even, and polished, so as not to injure the part to which it is applied. And in the middle there should be a transverse rod of bronze or iron to carry the lighted lamp. You may make this kind of cupping-vessel in a large size, larger than we have described; and in a small size too, to suit various ailments and the age of the user. For the cupping-vessels for boys and thin persons differ from those for men and stout persons.

Now this is the manner of applying this cupping-vessel with fire to a part of the body. You set light to a strongly twisted wick of linen or a small wax candle, and you set it on the middle of the cross-piece in the middle of the vessel so that the flame be directed toward the lower part of the cupping vessel and not burn the patient's body. Then the vessel should be placed on the part with the finger kept over the above-mentioned hole; then when we have held the vessel sufficiently long there the finger is taken away, the vapour will come out through the hole, and the vessel will become loosened at once. Then light the wick as prescribed and repeat if necessary. But the

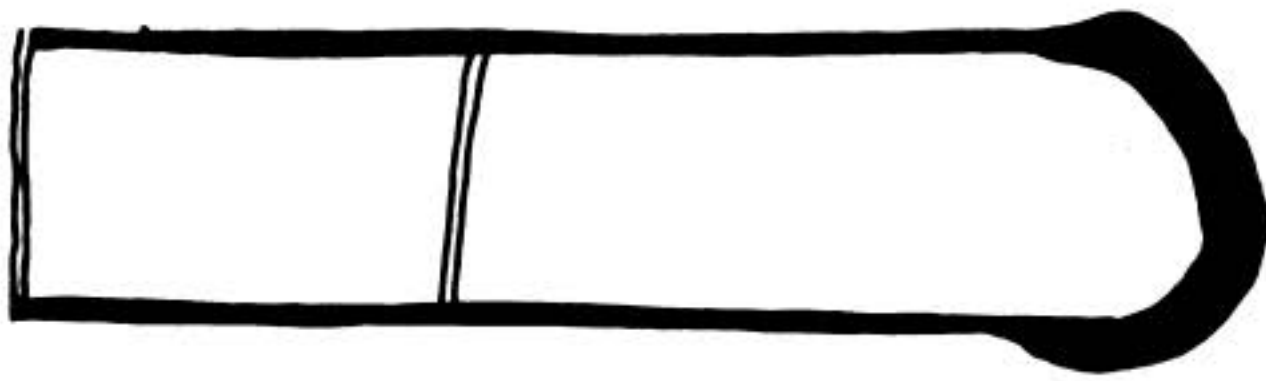


Fig. 185

Huntington

تكون سعة فمها أصبعين مفتوحتين على ما صوّرنا وقدرها فـى
 125 العمق نصف¹⁸ شبر ويكون فى جنبها فى نحو النصف منها ثقبه صغيرة
 على قدر ما تدخله الإبرة تصنع من النحاس الصينى أو النحاس الأصفر
 غليظة الحاشية ملساء مستوية مجلوة لئلا تؤذى العضو عند وضعها
 عليه ويكون فى وسطها قضيب معترض من نحاس أو حديد حيث توضع
 الشمعة بالنار، وقد تصنع هذه المحجمة كبيرة أكبر ممّا وصفنا وصغيرة
 130 على حسب الأمراض وسنّ مستعملها فإنّ محاجم الصبيان والنحفاء غير
 محاجم الرجال والعبل¹⁹ الأجسام،

وأما كيفية وضع هذه المحجمة بالنار على العضو فهو أن تقد
 فتيلة بالنار من كتان محكمة أو شمعة صغيرة من قير وتضعها على
 وسط القضيب المصلّب الذى فى وسط المحجمة ليكون صعود النار الى
 135 فوق نحو أسفل المحجمة لئلا يحترق بدن العليل ثمّ توضع على
 العضو والأصبع على الثقب الذى ذكرنا حتّى اذا أمسكنا المحجمة ما
 احتجنا نزعنا الأصبع وخرج البخار على ذلك الثقب وانحلت المحجمة
 على المقام، ثمّ تقد الفتيلة على الصفة وتعيدها إن احتجت الى

18. om. M. 19. وعلى H, وعلى A, وعلى cett.

cupping-vessel that is used in pleurisy, with water, has no cross-piece nor hole;¹ it is used by simply filling with water and applying to the part. This is the figure of it (fig. 186). Now the larger this cupping-vessel is, to hold much water, the better.

¹ From here to the end of the chapter, M reads 'It is used with hot water or a decoction of herbs as we have described, and is applied to the part alone. It should have a larger diameter than the cupping-vessel used with fire; and the larger the cupping-vessel the better, because of the amount of water it holds, if God Most High so wills'.

ذلك، فأما المحجمة التي تستعمل في مرض الشوصة بالما^{٢٠} فليس فيها
 ١٤٥ قضيب مصلب ولا ثقب وإنما تستعمل^{٢٠} بأن تملأ بالما^{٢٠} وتوضع على العضو
 فقط، وهذه صورتها :



Fig. 186

Huntington

وهذه المحجمة كلما كانت كبيرة لتسع ما^{٢٠} كثيرا كانت أفضل^{٢٠}

٢٠. بالما الحار او المطبوخ بالحشاش على ما وصفنا وتضع على
 العضو فقط ويكون في القطر اكبر من محجمته النار وكلما كانت كبيرة
 M. كانت افضل لما تسع من الما ان شا الله تعالى

CHAPTER NINETY-SEVEN.¹ On the application of leeches.

Leeches are mostly used on those parts of the body to which application of cupping-vessels is impossible, either because of their smallness, such as the lips, the gums, and so on; or because the part is bare of flesh, like the finger, the nose, and so on. This is the way to use them: you seek some leeches that are in fresh water free of dirt. Then you leave them in fresh water for a day and a night until they are hungry and nothing is left in their bellies; then you purge the patient's body, either by venesection or by the application of cupping vessels; then you scrub the afflicted part until it is flushed; and then place the leeches on it. When they are full they will fall off. If it is possible to make suction with a cupping vessel, the effect will be greater. But if not, wash the part with vinegar followed by much water; then rub and put pressure on it. If the blood continues to run after the leeches have fallen off, and becomes an ooze, let linen dressings be wetted with cold water and apply them over the place until the oozing stops. But if the bleeding be serious then sprinkle upon the place powdered vitriol or gall or similar styptics, until the haemorrhage is stopped. Or let split shelled beans be applied to the place and left until they stick there, and then the bleeding will stop. If it is necessary to repeat the application, the same leech should not be applied but another one if you possibly can. If the leeches fail to stick on, the place should be wiped over with fresh blood or pricked with a needle to bring out a little blood; then apply them, for if they smell any blood they will immediately adhere. When you wish to remove them, sprinkle over them a little powdered aloes or salt or ashes, then they will at once fall away.

¹ B makes this chapter 100. P makes it chapter 101.

BOOK TWO. CHAPTER NINETY-SEVEN

Leeches in place of cupping or bleeding seem to have been first described by Nicander of Colophon (200-130 B.C.) (Huber, *Dtsches Archiv f. Klin. Med.* 1891, xlvii,

p. 522). Antyllus and Galen are the earliest extant writers on the subject; Albucasis adds nothing new.

الفصل السابع والتسمعون في تعليق المعلق

المعلق إنَّما تستعمل في أكثر الأحوال في الأعضاء التي لا يمكن فيها وضع المحتاجم إنَّما لصفرها كالشفة واللثة ونحوها وإنَّما لأنَّ المضمور معرَّى من اللحم كالأصبع والأنف ونحوها ، وكيفية استعمالها أن
5 تقعد من المعلق التي تكون في المياه العذبة النقية من المغفرات
ثم تترك يوما و ليلة في الماء العذب حتى تجوع ولا يبقى في جوفها
شيء ثم يستفرغ البدن أولا بالفصد او بالحجامة ثم يمسح المضمور
العليل حتى يحمَّر ثم توضع عليه فاذا امتلأت سقطت¹ وإن أمكن²
من الموضع بالمحجمة فهو أبلغ في المنفعة وألا فاغسل الموضع بخل
10 ثم طباه كثير ويدلك ويعصره فإن تماذى جرى الدم بعد سقوطها
المعلق وكان ذلك رشحا فلتبل خرقة كان في الماء البارد وتضممها
من فوق حتى ينقطع الرشح ، فإن كرر الدم فذر عليه زاجا مسحوقا
او عفصا او نحوها من القوابض حتى ينقطع الدم او يوضع على
الموضع أنصاف الباقلي المقشر وتترك حتى يلمق الباقلي في الموضع
15 فإنَّ الدم ينقطع وينبني .إن احتيج الى إعادة المعلق فلا تملق
تلك المعلق اذا أمكن غيرها ، فإن امتعت المعلق عن التسمم لئلق
فليمسح الموضع بدم طرى او تغرز إبرة في الموضع حتى تخرج شيئا
من الدم ثم توضع فأنها اذا أحست بشيء من الدم لصقت على المقام
فاذا أردت أن تسقط فانثر عليها شيئا من الصبر او الملح او الرمان
20 فأنها تسقط على المقام ،

B. مزيج 3. cett. وامكن P, امكن M, 2. cett. وسقطت MV. 1.

BOOK THREE

ON BONE-SETTING

THIS third part of the book, too, is an essential necessity in the practice of medicine; it concerns the setting of the fracture or dislocation occurring in bones.

You should know, my sons, that ignorant practitioners and laymen and those who have never turned the pages of a single book of the Ancients about it, nor studied a single letter of it, arrogate this part of the art to themselves. For this reason this section of the science has died out in our parts; I have myself found no one competent in it; and whatever skill I have, I have derived for myself by my long reading of the books of the Ancients and my thirst to understand them until I extracted the knowledge of it from them. Then through the whole of my life I have adhered to experience and practice. So now I have described for you in this book all that my knowledge has encompassed on the subject and that my experience has encountered; I have made it accessible for you and rescued it from the abyss of prolixity; I have reduced it to a brief outline; and have explained it most clearly. I have made for you many drawings of the instruments that are used in it, which is an adjunct to explanation, as I did in the two previous books. And there is no power save in God the High, the Great.

BOOK THREE

This, the last and shortest part of Albucasis' *Surgery*, is taken up not chapter by chapter, but under two headings:

HEAD INJURIES

The contents of chapter 2 are of the highest interest. They formed the subject of the most celebrated ancient medical treatise, Hippocrates' *Περὶ τῶν ἐν κεφαλῇ τραυμάτων*, 'On wounds in the head'.

Cranial surgery has ever been a highly specialized subject, not less so in the earliest times than at the present day. All writers on the subject, from Hippocrates onward, therefore mention or describe an interesting range of special instruments. The present section of Albucasis' work contains nothing original,

but is of great value as illustrating many of the instruments mentioned by the Ancients:

1. Chisel or osteotome—مقطع—*miqta'*.

These have already been discussed in the Comment to chapter 86. But we have here specialized types that deserve separate notice.

Albucasis teaches that the fractured part of the skull should be removed by cutting out at the earliest opportunity after the injury. He proposes three sizes of the general pattern of chisel; and an additional variety:

(a) The fine chisel (fig. 188). The Marsh illustration, a most helpful one, shows a kind of pointed blade on a long stout wooden handle; evidently a plain fine-pointed chisel

الباب الثالث في الجبر هذا الباب أيضا "من وكيد" ما يحتاج عليه
 في صناعة الطب وهو جبر الكسر والفك الحادثين في العظام،
 اعلموا يا بنى أنه قد يدعى هذا الباب الجهال من الأطباء^٥
 والعوام ومن لم يتصفح قط للقدمات فيه كتابا ولا قرأ منه حرفا ولهذه
 العلة صار هذا الفن من العلم^٢ في بلدنا معدوما وإننى لم ألق فيه
 قط محسنا البتة وإنما استفدت منه ما استفدت لطول قرائتى لكتب الأوائل
 وحرصى على فهمها حتى استخرجت علم ذلك منها، ثم لزمّت التجربة
 والدربة طول عمرى وقد رسمت لكم من ذلك في هذا الباب جميع ما
 أحاط به علمى ومضت عليه تجربتى بعد أن قرئته لكم وخلصته من
 ١٥ شعب التطويل واختصرته غاية الاختصار وبينته غاية البيان وصوّرت لكم
 فيه صورا كثيرة من صور الآلات التى تستعمل فيه إذ هو من زيادة
 البيان كما فعلت في البابين المتقدمين، ولا قوة إلا بالله العلى
 العظيم،

1. MV, كثير B, كثير cett. 2. MV, العلوم cett.

CHAPTER ONE. In which is given the necessary compendious preliminary information on fractures.

Before we begin to speak of the fractures and dislocations of individual members we must, as an introduction to this book, give the general and particular information which compels your understanding and your being versed in it; both you and anyone else beside who is eager to learn this noble art.

So I say that when anyone has sustained a fracture or dislocation or luxation or fall, you should first hasten to venesect him, or get his bowel open, or both, if there be nothing to hinder such as physical weakness, or unless it be a small boy or a very old man to whom an accident of this kind has happened; or unless the weather be excessively hot or cold. Next, let his diet be restricted to cold vegetables and the flesh of fowl and kids; he is to be forbidden wine and rich meat and gluttony and all foods that fill out the blood-vessels, until you are sure that there is no abscess and see no reason to suspect a flux of matter to the place. Then let the patient return to his former diet according to his custom. When the broken bone has begun to mend, the patient should be nourished with very nourishing food, fat, strong, having some glutinous property, such as porridge, rice, heads, trotters, the tripe of cows, eggs, fresh fish, heavy wine, and the like; for on this diet the mending of the fracture will be quicker and better.

You should know that fractures occurring in mature and old people cannot join and mend into the original condition, on account of the dryness

used with manual pressure. The Huntington illustration is perplexing, being merely, it seems, a pointed rod with a crescentic cross-piece near the point. The same MS. has a series of very similar drawings (figs. 112-14) representing the *mikhda* or 'deceiver', in chapter 46 (see notes to this section). With some hesitation the following interpretation may be proposed: that the crescentic piece stands diagrammatically for the cross-section of this chisel, showing it to be a hollow chisel or gouge. This would correspond with the *κυκλίσκος* of Dioscorides or *κοίλη ἐκκοπεύς* of Galen. The use of such a tool on the bone of the cranium is self-evident.

(b) The medium chisel (fig. 189), shown by the Huntington MS. only, may be supposed to be a gouge with a splayed-out blade.

(c) The broad chisel illustrated in neither MS.

The author seems in general to have in mind a variety of sizes rather than types.

Although the chisel must be a very ancient instrument and is very commonly mentioned in surgical writings it is not referred to in the Hippocratic writings. Celsus seems to be the first author to mention it, suggesting the use of the *scalprum* to level down an overriding piece of bone in a fracture—*Satis est id quod eminent plano scalpro excidere*. This clearly means a plain flat chisel. Such a one is now in the museum at Cologne (see Milne, plate 41. 2). Heliodorus and all the later Greek writers refer to it as the *ἐκκοπεύς*. The variety of sizes is a repetition of classical practice. Paulus (vi. 90, 4) speaks of beginning the

الفصل الأول فيه جمل وجوامع من أمر كسر العظام وجب تقديمها
وقبل أن نبداً بذكر الأعضاء المكسورة والمنخلعة واحداً واحداً
فينبغي أن نذكر في صدر هذا الباب جملاً من القول وفصلاً
تضطررهم أولاً إلى فهمها والوقوف على حقيقتها أنتم ومن كان حريصاً
5 لتعلم هذه الصناعة الشريفة غيركم،

فأقول إنه متى حدث بأحد كسر أو فك أو وث¹ أو سقطة فينبغي
أن تسرع أولاً إلى فصدّه أو إسهاله أو هما جميعاً إن لم يمنع من
ذلك مانع مثل ضعف القوة أو كان الذي حدث به شيء من ذلك
صبياً أو شيخاً هرماً أو كان الزمان شديد الحر أو شديد البرد جداً
10 ثم يقتصر في غذائه على البقول الباردة ولحوم الطير والجدا² ويمنع
الشراب واللحوم الغليظة والتملؤ³ من الطعام وكلّ غذاء يملأ⁴ العروق دماً
حتى إذا أمنت الورم⁵ ولم تتوقع انصباب مادة إلى الموضع فحينئذ
فليرجع العليل إلى تدبيره الأول الذي جرت به عادته، فإذا أخذ
العظم المكسور في الانجبار فينبغي أن يتغذى العليل بأغذية تغذو
15 غذاء⁶ كثيراً غليظاً متيناً⁷ يكون فيه لزوجة مثل الهرائس والأرز⁸ والسرؤوس
والأكارع وكروش البقر والبيض والسّمك الطري والشراب الغليظ ونحو
ذلك فإنه⁹ بهذا التدبير يكون انعقاد الكسر أسرع وأجود،
واعلم أن العظام المكسورة إذا كانت في الرجال المشتدّين¹⁰
والشيخ فليس يمكن أن تتصل وتلتحم على طبيعتها الأولى أبداً

P. منيا، A. منبتا. 3. cett. الورم الحار، MV. 2. codd. والتغلى. 1.

P. om. A. المسنين. 6. codd. فان. 5. BM. والاوز. 4.

and hardness of their bones; though any bones that are extremely soft, like those of infants, may make a union and heal. Yet nature produces around the bone on all sides something like glue, with a certain viscosity, with whose help it joins, and it binds so that one part adheres to the other and they are linked to one another until it be good and firm as it had been before; so that there is no impediment to any of its functions. It is on this account that the patient's food should be the sort that has solidity and glueyness and thickness, as we have said. You should know that there are as many different types of fracture as there are members. Thus a fracture of the leg bone differs from a fracture of the cranium; and a fracture of the breast bone differs from a fracture of the bone of the back; and similarly there are differences among the other parts. We shall give an exposition of each kind of fracture, each in its own chapter and distinguished from the others. The fracture of each bone also has its own variations; for the fracture may be a clean break without splintering; or the fracture may be along the bone, with splinters and projections which may be sharp or may not; and the fracture may involve a wound and a laceration of the skin; and the fracture may be a crack. Each kind has its own special technique of setting which will be mentioned in detail, each in its place.

Among the diagnostic signs of a broken bone are: distortion, protrusion, the aspect of it, and the crepitus when you press on it with the hand. When there is no obvious distortion or crepitus at the site, nor do you feel movement when you manipulate the bone, and the patient does not experience severe pain, there is no fracture there. But it is possible that there is a

operation with the broader chisels and going on with the narrower as the work proceeds; ending with the probe-shaped one (*μηλωτρὶς*) which must clearly be the equivalent of Albucasis' first (fig. 188). The gouge which is represented by the drawing done by the Huntington scribe is the same, as has been hinted, as the *κοιλισκωτός* of Paulus or the *κοίλη ἐκκοπεύς* (hollow chisel) of Galen (*Meth. Med.* VI. 6). This gouge is not mentioned by Celsus.

(d) Lenticular chisel. This interesting variety of chisel, whose features are well shown in figure 191, seems to have consisted of three parts: first, the strong wooden handle; second, a stout metal blade with both edges sharp; third, a smooth rounded, i.e.

lenticular, head, all in one piece with the blade. The Huntington MS. drawing again is perplexing. Albucasis' account of the manner of using it may be paraphrased thus: Having laid bare the edge of the fracture—this being assumed to be depressed—the blunt lenticular end of the tool is inserted under the broken edge so as to come in between the inner table of bone and the dura. Thus the sharp cutting edge is in contact with the bone but the meninges themselves are protected, and indeed separated from the bone to be cut through, by the advancing blunt extremity. Then the instrument is to be struck with a hammer, not on the near end of the handle, as an ordinary chisel, but on one side causing the other edge

20 لجفوف عظامهم وصلابتها وقد يتصل ويلتحم ما كان من العظام فسى غاية اللين بمنزلة عظام الصبيان الصغار ولكن الطبيعة تثبت على العظم المكسور من جميع جهاته شيئا يشبه النراء فيه غلط يلتصق به ويشده حتى يلزم بعضه بعضا ويربط بعضه بعضا حتى يأتى فسى غاية القوة والوثاقة كما كان ألا حتى لا يعوقه شىء من أفعاله ،

25 ولهذا السبب يجب أن يعمل غذاء المريض الأغذية التى فيها مائة ولزوجة وغلظ كما قلنا ، وأعلم أن الكسر قد تختلف أنواعه بحسب اختلاف الأعضاء لأن كسر عظم الساق مخالف لكسر عظم الرأس وكسر عظم الصدر مخالف لكسر عظم الظهر وكذلك سائر الأعضاء كلها مخالف بعضها بعضا ، وسنأتى بذكر كل نوع من الكسر مشروحا فى بابيه

30 مفصلا من غيره ، وقد يختلف نوع كسر العظم أيضا فى نفسه لأنه قد يكون كسره تقصفا من غير أن تحدث فيه شظايا وقد يكون كسره على طول العظم وتكون لكسره شظايا وزوائد متبرئة وغير متبرئة ويكون الكسر مع جرح وخرق فى الجلد ويكون⁸ الكسر صدعا سيرا⁸ ، ولكل نوع حيلة خاصية فى جبره على ما سياتى ذكره مفصلا فى موضعه ،

35 ومما يتعرف به كسر العظم اعوجاجه ونتوء وظهوره للحس وتخششه عند غمزك إياه بيدك فتى لم يكن فى الموضع اعوجاج ظاهر ولا تخشش ولا تحس عند جسك العظم باضطراب ولا يجد العليل كبير رجع فليس هناك كسر بل يمكن أن يكون وثا او كسرا هينا او

فى الكسر صدع يسير، A الكسر مع صدع يسير 8. cett. لبعض، MV. 7.
V. الكسر يسير، HM الكسر صدع يسير، P.

luxation or a slight fracture or a little crack; so you must not disturb it with any extension or pressure, but apply one of the remedies suitable to the site, such as will be described later; then bind up gently.

If the bone is parted and broken in two and there is no fragmentation but a simple separation of one part from its fellow, then you should lose no time in straightening and aligning it before an abscess sets in. If an abscess does set in, then let a few days pass until it has subsided; then gently and skilfully straighten it in whatever way you can. You should know that the setting or alignment of this is easier than that of a splintered bone. Then bandage as will be prescribed. But if the bone is splintered, extension from either side is necessary, whether it be hand or foot; with your own hands if it be a small member, or with two ropes or with one hand and a rope. You should place the part on a flat surface in its natural attitude so that when both parts of the broken bone have been extended you can try to restore the fragments to their proper place with all the skill and gentleness possible; and do your utmost to ensure that the patient experience no pain or distress as you operate. Try diligently to get one part of the bone fitted in the best form to the other. At the same time you should palpate and investigate both of them with your hand, and if you find anything wrong then mend it and straighten it to the best of your ability. But avoid violent extension or compression which many ignorant people apply; for by doing so they often cause abscess or crippling in the limb, as I myself have many

to cut laterally. In this way this lenticular chisel could be made to cut right round in a circle, and the fractured depressed segment of bone freed to be either raised or removed.

Albucasis has copied his account of this instrument either direct from Galen, whom he acknowledges in this context, or from Paulus (vi. 90), Galen's copyist. Galen and his successors call the instrument *ἐκκοπεύς φακωτή* or simply *φακωτός*, i.e. lenticular. It is only with this special form of chisel that the hammer was to be used.

2. *Drill or trephine*. Only one kind of boring instrument is mentioned here; but the whole subject of the drilling instruments of the Arab surgeons is due for discussion.

Two different words are used in the course of the treatise.

(a) *مثقاب*—*mithqab*—literally a wimble. This is the drill of the present chapter. Both

MSS. show three different sizes; all agree in having very sharp conical boring heads, with long graved or roughened handles to enable the hands to impart a smart rotating movement. They are described as non-sinking drills because the head is provided with a projecting collar to prevent the point sinking into and damaging the underlying meninges. Curiously, none of the six figures shows this collar (fig. 190). This cranial drill is equivalent to the *τρύπανον ἀβάπτιστον* of Galen. Both Galen (*Meth. Med.* vi. 6) and Paulus (vi. 90) describe the instrument at length as having a projecting rim or collar (*ἵρυς*) above the point.

The plain *mithqab*, or collarless drill, is mentioned, but not described or illustrated, in Book II, chapter 94, as required for boring away the bone all round a weapon that had got inextricably embedded. Hippocrates

صدعا يسيرا فلا ينبغي أن تحركه بالمدّ والغمز البتّة بل احمل عليه
40 من الأدوية التي يأتي ذكرها بعد حين ما يوافق الموضع ثم تشبّهه
شدّا لطيفا،

واعلم أنّ العظيم اذا انقصف واندّق باثنين⁹ من غير أن تحدث
فيه شظايا إلا أنه قد زال كل جزء عن صاحبه فينبغي لك أن تبادر
من حينك الى تقيمه وتسويته قبل أن يحدث له ورم حارّ، فإن حدث
45 له ورم حارّ فاتركه أيّاما حتى يسكن الورم الحارّ ثم سوه بأى وجه
تقدر عليه من الرفق والحيلة، واعلم أنّ جبره وتسويته أسهل ممن
العظم الذى قد حدث فيه شظايا، ثم يشدّ على ما سيأتى ذكره،
فإن كان العظيم فيه شظايا فلا بدّ من مدّ العضو المكسور ممدّ
الناحيتين يدا كان او رجلا إيّاها بيدك إن كان العضو صغيرا وإيّا
50 بحبلين وإيّا مع الحبل واليد، وليكن وضعك العضو على موضع مستو
على شكله الطبيعيّ حتى اذا امتدّ جزأ العظيم المكسور فحينئذ فسر
رّت تلك الزوائد فى مواضعها بكلّ وجه تقدر عليه من الحيلة والرفق
واحرص جهدك أن لا تحدث على العليل بفعلك وجعا ولا ألما ورم
جهدك أن تضمّ أحد العظيمين بصاحبه على أفضل الهيئة، وينبغي
55 فى ذلك الوقت أن تلمسهما وتجمّسهما بيدك فإن رأيت هناك شيئا
مخالفا أصلحته وسويته بقدر طاقتك، واحذر المدّ الشديد والغمز
القرى كما يفعل كثير من الجهّال وكثيرا ما يحدثون¹⁰ بفعلهم ذلك ورا
حارّا او زمانة فى العضو كما قد شاهدت ذلك من فعلهم مرارا،

P. يحدّ بوا، BMV، يحدّ ثوا 10. MV s. p. لاثنين 9.

times seen. Then after you have exactly repositioned it and bandaged it, keep that limb still and quiet, and bid the patient beware of moving it while awake or asleep, and in his shifting and stirring, and in opening the bowel, and in every activity, to the utmost of his capacity; and that he should try to let the position of the limb be such that he is free from pain; when pain or distress is felt in any position in which he has disposed the limb, he should move it to a different position in which he feels no pain. At the same time he should try to make that position even and straight, so that when the limb is mended there be no curvature in it.

As to the way to bandage a broken limb, it is as I shall now describe to you. You should know that limbs which may be fractured vary in their size and shape. The strips of bandage for those that are small, such as an arm or finger or forearm or the like, should be soft and fine, while those that are thick, such as the hip, back, or breast, should have broad and strong bandages. For a broad bandage holds fast to a big limb, binding it all round with an even pressure so that no defect may occur. Then, after you have finished the setting, begin by applying a suitable liniment on soft tow over the site of the fracture, then start to wrap the bandage over the actual site, three or four turns of bandage as the part may require, winding it fairly

mentions only the plain *τρύπανον*, in, for example, 'On wounds in the head', chapter 18, where he refers to the small-size drill (*σμικρὸν τρύπανον*) for a child. Both kinds are described by Celsus (VIII. 3)—*Terebrarum autem duo genera sunt: alterum simile ei quo fabri utuntur; alterum capituli longioris quod ab acuto mucrone incipit, dein subito latius fit*. This clearly shows that the simple *τρύπανον* or *terebra* was really a plain awl; the other, a safety variety, was provided with a rim.

(b) *مشعب*—*mish'ab*—perforator or drill. This term is only once used, for the lithotriptic drill described and illustrated in chapter 60 (fig. 137). It differs from the other drills shown in the course of this work in having a comparatively short handle and a very long slender drilling-point. Whether it was of triangular section we do not know. It has already been discussed in the comment to that chapter. It does not seem to correspond at all to any classical instrument.

In reviewing these drilling instruments there are two points specially worthy of note.

First, there does not seem to be any place assigned to the original Hippocratic trephine—*πρίων* or *πρίων χαράκτος*. There must have been a marked difference between the two. *Πρίων* literally means a saw; but that for this purpose the *πρίων* was a kind of rotating saw like a modern trephine is shown by Hippocrates' words in 'On wounds in the head', chapter 21, '... θερμαινόμενος γὰρ ὑπὸ τῆς περιόδου ὁ πρίων—'. . . the saw, becoming heated in rotating, must be cooled . . ., etc.', this is further confirmed by the use, later, of the words *χοινίκη* and *χοινίκιον* in the Greek, and *modiolus* in the Latin, for the same type of instrument. *χοινίξ* means a hoop or ring; and Celsus (VIII. 3, 1) describes the instrument as circular with a serrated edge and a central pin. It is to be remarked that Paulus (VI. 90, 7) expressly states that operating on the head with *χοινικίδες* and *modioli* was condemned now by the moderna. Therefore there is every reason to think that the true trephine had fallen out of use by the time of Albucasis; who therefore had no reason to mention it.

ثم ألزم بعد التسوية والإلتقان والشّد ذلك¹¹ العضو السكون والبدعة
 60 وحذر العليل أن يحركه في وقت يقظته¹² ونومه وعند¹³ تحوّله واضطرابه¹³
 وعند برازه وجميع حركاته غاية وسعه وأن يتحرّى أن تكون نصبة
 العضو نصبة يأمن معها الوجع، وذلك أنه متى أحس في حال¹⁴ نصبه
 العضو¹⁵ بوجع أو ألم أن ينقله إلى غير تلك النصبة¹⁶ إلى¹⁷ التي لا يحس
 معها بوجع ويتحرّى مع ذلك أن تكون¹⁸ نصبته تلك¹⁸ مستوية مستقيمة¹⁶ لئلا
 65 يحدث في العضو اعوجاج إذا انجبر،

وأما كيفية شدّ العضو المكسور فهو على ما أنا واصفه لك، اعلم
 أن الأعضاء المكسورة تختلف في صغرها وكبرها وهيأتها فما كان منها
 صفرا مثل الذراع والأصبع والزند ونحوها فينبغي أن تكون لفائف
 الخرق وطئة¹⁹ لطافا وما كان منها غلاظا كالفخذ والظهر والصدر فينبغي
 70 أن تكون اللفائف عراضا صلبة لأنّ الرباط العريض يلزم العضو الكبير
 ويشدّه من كلّ جانب شدا متساويا لا تداخله خلل، ثم تبدأ بعد
 فراغك من التسوية أن تحمل الطلاء الموافق لذلك في مشاقة لينة على
 موضع الكسر ثم تبدأ بلفّ الرباط على موضع الكسر نفسه ثلاث لفات
 أو أربع على حسب ما يستحقّ العضو وتشدّ يدك قليلا بالرباط ثمّ

تحركه واضطرابه 13. V. تعطسه, M. تغطيته 12. ABP. لذلك 11.
 على 16. MV. للعضو 15. M. وقت 14. M. اضطرابه وتحويله, HPV.
 تلك 18. P, om. cett. 17. M. حسب ما حدد الراحة وقله الالم
 cett. رطبه, P. ارطب, A. اوطيه 19. M. نصبه, V. نصبته, H. نصبته تلك

tight. Then carry on the bandage above the site of the fracture, winding it more loosely than on the fractured place, and continue a little with the bandaging beyond the place of fracture, loosening the tension gradually, until you have taken up a good amount of the sound part. Then take another bandage and wind it several turns over the fracture and then carry it over the part below the fracture, the tightness and looseness being arranged in the same way that we prescribed for the first covering, of the upper part. Then put between the bandages enough soft tow or soft rags to correct the curves of the fracture, if any; otherwise put nothing in. Then wind over it another bandage and at once lay over it strong splints, if the part be not swollen and effused. But if there be swelling or effusion in the part, apply something to allay the swelling and disperse the effusion; leave it on for several days and then bind on the splints. The splints should be made of broad halves of cane, cut and shaped with skill; or the splints may be made of the wood used for sieves, which are made of pine; or of palm branches; or of brier or giant fennel or the like, whatever wood be at hand. The size of each splint should be of this form and shape, except that the splint that is placed on the fracture itself should be a little thicker and broader than

Second, Albucasis does not mention the method of rotating the drill with a thong or strap. Now Celsus (VIII. 3, 2) expressly states: *deinde is habena quasi terebra convertitur* referring to the *modiolus*. This establishes that in his time, at all events, the drill and trephine (*terebra* and *modiolus*) were rotated by means of a strap after the manner that is common to all mankind in all ages. Albucasis merely says 'apply the drill to the bone and revolve it with your fingers'. The hands are similarly to be used to rotate the lithotriptic drill in chapter 60. The remaining instruments for cranial surgery have already been referred to in the notes: Book II, chapter 86, for the raspatory (*mijrad*); II. 31 for forceps (*kalālib*); and the hammer.

Strangely enough one instrument that is prominent in the classical teaching on head injuries, the meningophylax (μηνιγγοφύλαξ), is mentioned, not here but in connexion with the fracture of the clavicle, with an illustration (fig. 192). As it is so distinctly a cranial instrument it is included here. It is first mentioned by Celsus (VIII. 3, 8) thus: *... membranae custos ... Graeci vocant μηνιγ-*

γοφύλαξ. *Lamina aenea est, prima paulum resima, ab exteriori parte levis; quae demissa sic, ut exterior pars eius cerebro propior sit.* It is a bronze plate, at the front slightly tilted (or bent), smooth on the outer surface; and placed so that the outer surface is toward the brain. Paulus (VI. 77, 4) says of this instrument that it should be used in bone operations at any vital spot. Celsus' description is rather meagre; it merely indicates a thin bent slip of metal to insert beneath the bone and protect the underlying brain when cutting on the bone. Albucasis gives a good account of it with excellent illustrations. The Marsh sketch seems the more helpful. There is depicted a flat metal instrument of which the more important parts are the round-ended strips (a) and (b)



springing at either end out of a larger plate in the middle (c). It is indeed, as he says,

75 تذهب به الى الناحية العليا من موضع الكسر بشد أقل من شدك
للموضع المكسور ثم تتباعد باللف عن موضع الكسر قليلا وترخي الشد
قليلا قليلا حتى تأخذ من الموضع الصحيح شيئا صالحا ثم تأخذ
عصاة أخرى فتلقها أيضا على الموضع المكسور لفات ثم تذهب باللف
الى الناحية السفلى من الكسر وليكن فعلك في شد اللف ورخاوته
80 على ما ذكرنا في لف الأول الأعلى ثم تضع بين اللفائف من المشاقة
اللينة أو الخرق ما يستوى به اعوجاج الكسر إن كان فيه اعوجاج وإلا
فلا تجعل فيه شيئا ثم تلق عليه عصاة أخرى ثم تسوى على هذه
اللفات الجبائر المحكمة من ساعتك إن لم يكن في العضو نفخ ولا ورم
حار، فإن كان فيه نفخ أو ورم حار فاحمل عليه ما يسكن ذلك الورم
85 ويذهب بالنفخ واتركه آيا ما ثم شد عليه حينئذ الجبائر ولتكن الجبائر
من أنصاف القصب العراض المنحوتة²⁰ المهيأة بحكمة أو تكون الجبائر
من خشب الغرابيل التي تصنع من الصنوبر أو جرائد النخل أو خلنج
أو الكلخ²¹ ونحوها مما حضر من ذلك، ولتكن سعة كل جبيرة على
هذه الصورة وهذا الشكل بعينه إلا أن تكون الجبيرة التي توضع على
90 الكسر نفسه أغلظ وأعرض قليلا من سائر الجبائر، وأما طول الجبيرة

20. MP s. p. المجوفة. 21. H, P, om. cett. أو الملكح.

the others. As to the length of the splint, it should be greater or less as suits the fractured part.

Figure of a splint (fig. 187).

Then bind over the splints another bandage just as tightly as you did your first; then over that tie it up with cords arranged in the way we have said, that is, with the pressure greatest over the site of the fracture and lessened as you move away from it. The cords should be of medium thickness, of linen supple of quality. For if the cords are too thick, such as I have seen ignorant people use who made their cords of twisted bands of linen, that will be a grave error, for moderate tension with these is impossible. Nor are fine threads suitable either, for with these you cannot achieve sufficient tension. Between splints there should be a space of not less than a finger's breadth.¹ If, after bandaging, the patient is hurt in the sound parts by the ends of the splints, then put a little soft tow or carded wool under them until they no longer hurt him thus. As for the case of a

¹ M reads 'a finger's breadth or less'.

a double-ended spatula. The broader end (*a*) was for larger openings and the narrower (*b*) for smaller. The broader, shouldered plate in the middle would act as a stop to prevent it passing right in. Perhaps each spatula was angled at its junction with the mid-piece. On the whole this would go very well with the classical description. The Huntington drawing was made by an ignorant copyist, for the spatulae are too short, dangerously pointed, and of the same proportion on either side.

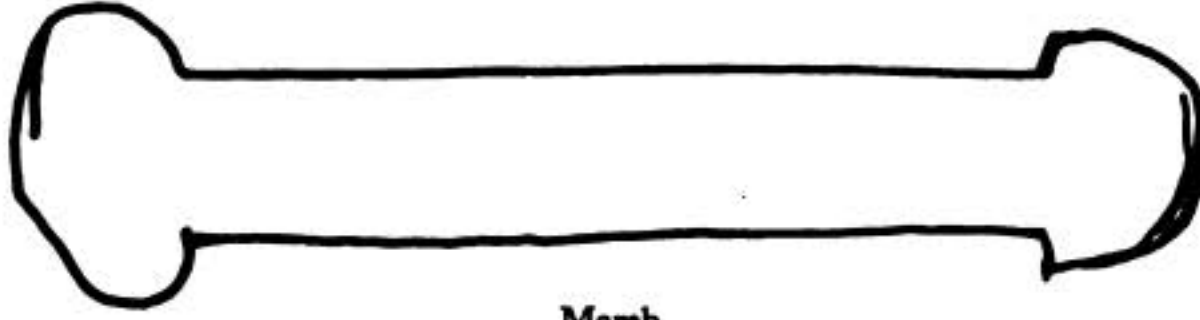
FRACTURES AND DISLOCATIONS IN GENERAL

This Book III deals with fractures along lines that had already been clearly marked out by a succession of ancient writers. Albucasis does not profess to offer anything new; and a brief examination shows that, while here and there he may have independently consulted Galen or Hippocrates, who perhaps were directly known to him, in the main he transcribes or follows Paulus Aegineta. Every chapter, in fact, in this part answers to a parallel chapter or section in Paulus. And both Paulus and Albucasis omit fracture of the calcaneus which Hippocrates gives in his *Περὶ ἀγμῶν* (chapter 11), and fracture of the

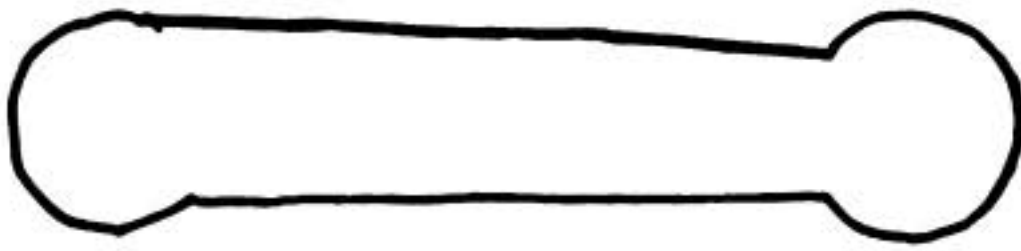
olecranon in Hippocrates, *ibid.*, chapter 14. Paulus dismisses fracture of the ear given by Hippocrates and Celsus (VIII. 6) as not a true case, and so we find it not even mentioned by Albucasis. But Albucasis does give a chapter on fracture of the male and female privy parts which does not appear in other writers. For the rest Albucasis describes symptoms, diagnosis, and treatment on approved lines and illustrates a few appliances.

Splints—جيرة—*jabira*—are illustrated by figure 187. The Arabian splint appears from this to have been of quite fair breadth and with a slight rounded expansion at each end. According to chapter 16 they were strips (*fasqiya=fascia*) of pine or palm, such as were used to fill in the gaps between the planks of a ceiling. They are recommended for fractures of the humerus, forearm, fingers, femur, and leg. They were to be applied, not directly to the limb, but over a layer of bandaging; and were themselves to be wrapped in bandage (chapter 16). The Arabian *jabira* was the equivalent of the Greek *βάβηξ* (lit. bamboo cane) and the Latin *ferula*. Hippocrates directs that splints should be *σίμοι κατ' ἄκρα*, i.e. flattened at the ends (*Κατ' ἰητρειὸν*, 12). The word *σίμος*

فتصنع على حسب ما يليق بالعضو المكسور من كبره وصغره ،
صورة الجبيرة :



Marsh



Huntington

Fig. 187

ثم تشد على الجبائر بعصابة أخرى على حسب شدك الأول
بعينه ثم تربط من فوق بالخيوط المحكمة على حسب ما ذكرنا من
95 الشد وهو أن يكون شدك على موضع الكسر أكثر وكلما بعد عن الكسر
كان الشد أقل ، وينبغي أن تكون الخيوط متوسطة في الغلظ والرقّة
ولتكن من الكتان الرطب خاصة²² لأن الخيوط إن كانت غلاظا مثل ما
شاهدت من فعل الجهال يجعلون خيوطهم من شرائط الكتان المفتولة
وهو خطأ عظيم لأنه يقع الشد بها خارجا عن الاعتدال والخيوط
100 الرقاق أيضا لا تصلح لأنك لا تبلغ بالشد بها ما تريد ، ولا ينبغي
أن يكون بين الجبيرة والجبيرة²³ أقل من أصبع²³ فإن تأدى العليل
بأطراف الجبائر بعد الشد في المواضع الصحيحة فاجعل تحتها من
المشاقة اللينة أو الصوف المنفوش حتى لا يؤذيه من ذلك شيء ، وأما

M. الا اصبع او اقل من ذلك . 23. MV, om. cett.

fracture accompanied by an open wound, it will be mentioned in a special section on its own.

You should know that not every fracture should be bound up with splints on the first day; that is, when the part is big you should not apply splints until five or seven days after, or more, depending on when you are satisfied that there is no effusion.

This is a description of the plasters that the Ancients used for repair, applied to a fracture, dislocation, or sprain. Description of a common simple plaster for the repair of fractures, suited to most constitutions, particularly for women and children, because in it there predominates neither hot nor cold. Take mill-dust, that is, the fine flour that sticks to the walls of a mill as the grindstone moves. Pound it as it is without sieving, with egg-white, to a medium consistency; then use.

Description of another plaster for the repair of a fracture, luxation, or dislocation: take ten drachms each of pulse, gum-mastic, acacia, elecampane, *mughāth*,¹ and *sukk*;² five drachms each of myrrh and aloes; twenty drachms of tamarisk and twenty drachms of clay of Armenia or Asia Minor; all should be pounded fine and mixed with water of tamarisk, or with egg-white if the patient be of a warm constitution; then use this plaster, which is excellent for uniting, quickly repairing broken bones, and suits most people because of its mildness.³

¹ The root of *Glossostemon Bruguieri*, according to Siggel, p. 69. For a description, see Lane, p. 2725 b-c.

² A compound medicament. See Lane, p. 1387 b; Dozy, p. 666 a; Siggel, p. 42, Colin and Renaud, p. 119, no. 1102. According to Avicenna (*Canon*, Būlāq edn., vol. i, Book 2, p. 381), it is an extract from *āmlaj*, i.e. *Phyllanthus emblica*.

³ P adds 'Description of mending ointment, the ointment used at the hospital of Cairo. Equal parts are taken of acacia, myrrh, buckthorn, cypress-cones, olibanum, *mughāth*, clay of Asia Minor, red ochre, and aloes, and an amount equivalent to the whole, of marsh mallow or good lote, if God Most High so wills.' A possible alternative translation of the last part is 'of marsh mallow or lote; this is good if God Most High so wills'.

means snub-nosed and this describes actually the appearance of the splints shown in both MSS.

Hollow or gutter-splints are mentioned in chapter 16 but not illustrated. They would correspond with the *σωλήν* for fracture of the femur and leg, mentioned, with scant approval, by Hippocrates (*Fractures*, 22). Celsus also suggests this type of splint: *In canalem coniciendum est* (VIII. 10); Paulus describes them as made of either wood or

earthenware, and says they are objected to by the moderns.

A ball-splint for fractures of the small bones of the hand is well described in chapter 13; and seems to be an original suggestion.

Trapeze. This device for reducing a fractured humerus is shown by Albucasis in chapter 11 (fig. 193). It consists of a curved piece of wood with a hole or ring at either end by which it could be slung from the roof.

إذا كان الكسر مع جرح وحدث خرق في الجلد²⁴ فسنأتى بذكره على
105 انفراد ،

واعلم أن ليس كل عضو مكسور ينبغي أن يشدّ بالجبائر من أول
يوم وذلك أن العضو إذا كان كبيرا فلا ينبغي أن توضع عليه الجبائر
إلا بعد خمسة أيام أو سبعة²⁵ أو أكثر على حسب أمنك من حدوث
الورم الحارّ،

110 وهذه صفة الضمادات التي كانت تجبر بها الأوائل التي توضع
على الكسر والفك والوث ، صفة ضماد عاتق مختصر يجبر الكسر ويصلح
لأكثر الأمزجة ولا سيما الصبيان والنساء²⁶ لأنه مما لا يغلب عليه حرّ ولا
برد ، وهو أن تأخذ من غبار الرحى وهو لباب الدقيق الذي يتعلّق
في حيطان الرحى عند حركة المطحنة فتعجنه كما هو من غير أن
115 تغرله ببياض البيض وتجعل عجنه لا شخينا ولا رقيقا ثم تستعمله ،

صفة ضماد آخر يجبر الكسر والخلع والوث ، يؤخذ من الماش
واللادن والأقاقيا والراسن والمغاث والسكّ من كلّ واحد عشرة دراهم
ومرّ وصبر من كلّ واحد خمسة دراهم ومن الأثل عشرون درهما ومن
الطين الأرمني أو الروميّ عشرون درهما يدقّ الجميع ويخلط بما²⁴ الأثل
120 أو ببياض البيض إن كان مزاج العليل محرورا ثم يستعمل هذا الضماد
فلأنه حسن التآليف يجبر العظام المكسورة سريعا ويصلح لأكثر الناس

M. والشبان 26. P. تسعه 25. AHP. الجراح 24.

Description of another plaster valuable for a fracture or sprain: let there be taken ten drachms each of *mughāth*, pulse, and white marsh mallows, five drachms each of myrrh and aloes, six drachms of acacia, and twenty drachms of Armenian clay. Let them all be well beaten up and passed through a sieve and made into a paste with water or egg-white and used.

Description of a plaster for dislocated joints or bones, soothing the accompanying pain, and for a crack or fissure of bone: let unwashed wool be taken and soaked in a decoction of oil and vinegar and applied to the place. Now this plaster has no power of repair but it is outstanding for reducing effusion and dispersing pain.

Description of another plaster for the repair of a broken bone: let there be taken the leaves of the hard fig and of the wild poppy and both be beaten up together and a plaster made of them while still fresh and damp.

Description of another simple plaster used when a fracture is mending and you wish to disperse residual swellings: take one part each of marsh mallow root, chamomile, violet flowers, and flour of vetch; pound it all and make a paste with decoction of wine, if the part be not inflamed. But if it be inflamed make it up with water of fresh coriander or plain water, and use.

The patient was to hang his arm over this while traction was made upon it to reduce the overlapping ends of the fracture.

Bone lever, or elevator. This instrument, illustrated in chapter 19 by figure 194, seems from the Marsh drawing—as often, much the better—to have been of iron having a fairly broad shaft tapering to a thick strong head; and ending in a short stub at right angles which is described as sharp. It looks like a larger version of the modern dental elevator. Its function evidently was to be inserted, wedge-like, between the broken ends, lever them apart, and so enable the operator to appose them accurately. All this was, of course, in the case of a compound fracture. This instrument is the counterpart of the Greek *σιδήρια* referred to in Hippocrates (*Fractures*, 31): . . . *σιδήρια* . . . *ὅνπερ οἱ μοχλοὶ ἔχουσιν*; Paulus later calls the instruments *μοχλίσκοι* (VI. 107, 2) and describes them in exactly Albucasis' terms. Failure to reduce by this means, the author then says, must be made good by removing the protruding bone ends with chisel or saw.

Pestle, or upright spar, for reduction of the humerus. This is an apparatus (fig. 195) which consisted of an upright fixed in the ground, having at the top a ball or rounded head, well padded, to fit into the axilla. While the arm was held down over one side of the head of the spar, the patient's weight on the other side generally sufficed to effect reduction of the dislocated shoulder. Hippocrates (*Joints*, 5) described the same device naming it *ὑπερον* or pestle; Celsus (VIII. 15, 2) terms the same *spatula*; and Paulus (VI. 114, 6) *ἀμβη*. Hippocrates also described the use in this connexion of the ladder (*κλιμάκιον*), as does Albucasis.

Extension rack. This interesting apparatus has always fascinated commentators on Hippocrates, who first described it. The description given here in chapter 30 (figs. 196, *a* and *b*) follows that of Paulus (VI. 117) but does not materially differ from that of Hippocrates (*Joints*, 47 and 72), Celsus (VIII. 20, 6) (. . . *scamnum cui ab utraque parte axes sunt* . . .) and Heliodorus, quoted by Orribasius (XLIX. 1-4). As the whole question has

لاعتداله²⁷

صفة ضماد آخر ينفع أيضا للكسر والوث²⁷ ، يؤخذ مغاث ومباش
وخطمي أبيض من كل واحد عشرة دراهم مر وصبر من كل واحد خمسة
دراهم افاقيا ستة دراهم طين أرمني عشرون درهما يدق الجميع دقا¹²⁵
ناعما وينخل ويعجن بالماء او ببياض البيض ويستعمل ،

صفة ضماد للمفاصل والعظام الزائلة عن مواضعها ويسكن الوجع
العارض لها ولانصداع العظم والكسر ، يؤخذ الصوف المودح²⁸ فيغمس
في الخل والزيت المطبوخ ويوضع على الموضع ، وهذا الضماد ليس¹³⁰
فيه قوة جبر ولكن هو فاضل في تسكين الورم الحار ودفع الأوجاع
خاصة ،

صفة ضماد آخر يجبر العظم المكسور ، يؤخذ ورق التين الأصم²⁹
وورق الخشخاش البري ويدقا جميعا ويضمد بهما رطبين ،
صفة ضماد آخر مختصر يستعمل عند انجبار كسر العظم وأنت
تريد تحليل بقية الورم ، تأخذ من أصل الخطمي والبابونج ونوار¹³⁵
بنفسج ودقيق الكرستة من كل واحد جزءا دق الجميع واعجنه بالطلاء
إن لم يكن العضو مستحرا فإن كان مستحرا فاعجنه بما الكزبرة او
بالماء واستعمله ،

صفة لطوخ جبر وهو اللطوخ الذي يستعمل بمارستان مصر يؤخذ²⁷
اقاقيا ومر وخولان وجوز سرو ولوان ومغاث وطين رومي ومعره وصبر
P. اجزا سوا ومثل الجميع خطمي او سدر جيد ان شا الله تعالى
P. حاصه الاحمر B, الاحضر 29. BP s. p. A, الموضع M, الموسخ 28.

Description of another plaster stronger than the former for resolving, used if a hard swelling arises as the bone sets: let there be taken equal parts of each of marsh mallow roots, linseed, fenugreek, melilot, sweet marjoram, violet flowers, and chamomile; they should all be beaten up together and made into a paste with willow infusion or sweet water or wine, according to whether the part is inflamed or its heat has subsided.

Now Hippocrates in his book did not mention any application for the repair of a fractured part except a wax plaster made of wax and oil, nothing else. He prescribed that it be of a consistency midway between thick and thin. Galen, on the other hand, thought it good to apply to the broken limb, when it is mending, things which have a certain power of drying, with some heat, such as myrrh, aloes, olibanum, and the sort of thing we have mentioned.

Description of a plaster valuable for debility and pain: let equal parts of each be taken of *mughāth*, chickpease, minced human hair or birds' feathers, marsh mallows and salt; grind it up and pass through a sieve and make into a paste and use as a plaster.

As to the length of time the bandages should remain on before being loosened: you should keep an eye on the patient and if he suffers no pain or itching or any shifting of the broken bone, then they should not be loosened for a number of days; but if he experiences at the place a violent itching or a disturbing pain or swelling, then hasten to loosen them and make no delay; and remove the plaster. Then you must take a soft cloth or a soft marine sponge and dip it in tepid water and bathe the place until the itching sub-

been entered into by many Hippocratic commentators it is enough to indicate the significance of the diagrams in the two Bodleian MSS. The Huntington drawing is, this time, much the clearer. It shows a broad bench, at the head and foot of which two pestle-shaped posts are placed, shown diagrammatically, each with a hole in the head. Each pair of posts is placed one span apart, according to the text; and through the hole in each pair of uprights or posts runs a *lawlab*—literally 'screw'—that is, a windlass having a handle to turn it by at each end. In the Marsh illustration the ropes are seen actually attached to these axles or windlasses. Marsh also shows a handle at each end of the right-hand shaft, in contradiction to the

text. According to chapter 31, when this bench was to be used for the reduction of the hip-joint a central upright was provided to locate in the fork of the legs, like the perineal stay in the Hawley table, to hold the patient during extension.

Plaster cases. This last point in the third book deserves attention. In chapter 1 there is described a plaster made of mill-dust, which, as he says, was principally flour, made into a stiff paste with egg-white. He suggests this as specially to be applied in the cases of women and children. He directs its use in, for example, fractures of the clavicle and forearm. It is interesting to recall that Thomas Gale, in 1564 (*Chirurgie*, lib. iv, c. 3), recommended white-of-egg bandages as a stiff dressing for

صفة ضماد آخر أقوى في التحليل من هذا الأول يستعمل عند
140 ما يحدث ورم صلب عند انجبار العظم، يؤخذ من أصل الخطمي
ونز الكتان والحلبة³⁰ وإكليل الملك ومرزنجوش ونوار بنفسج وبابونج من
كل واحد جزء يدق الجميع ويعجن بماء الخلاف³¹ أو بالماء العذب أو
بالطلاء كل ذلك على حسب حرارة العضو وسكون حره،

وأما ابقرط فلم يذكر في كتابه أن يوضع على العضو المكسور
145 عند جبره إلا القيروطي المعمول من الشمع والزيت لا غير ووصف أن
يكون متوسطا بين الغلظ والرقّة، وأما جالينوس فرأى أن يوضع على
العضو المكسور عند جبره الأشياء التي فيها جفوف مع³² شيء من³² حرارة
مثل المرّ والصبر واللبن ونحو ما ذكرنا،

صفة ضماد ينفع للوهن والوجع³³ يؤخذ مغاث وحمص وشعر
150 إنسان مقروض أو ريش طائر وخطمي وملح أجزاء سواء يدق وينخل
ويعجن ويضمد به،

وأما مقدار ما ينبغي أن يبقى الرباط ثم يحلّ فهو أن تنظر فإن
لم يحدث بالعليل وجع ولا حكاك ولا تحرك العظم المكسور عن موضعه
فلا تحله أيا ما كثيرة فإن حدث به في الموضع حكاك شديد أو وجع
155 مقلق أو نفخ فبادر فحله في الوقت ولا تؤخر ذلك البتة ونع³⁴ الضماد
عنه، ثم تأخذ خرقة لينة أو إسفنجة بحرّة رطبة فاغمسها في الماء
الفاتر واغسل بها الموضع حتى تسكن الحكة ويسكن الوجع ثم تترك

M. تسخين. 32. B. الصفصاف. 31. P. وجلنار. 30.

V. وروول. M. وتنزيل. 34. P. <الذي يحد> A. <الذي>. 33.

sides and the pain settles; then let the limb rest for an hour; then apply to it raw wool soaked in oil and vinegar or oil of roses, and bandage it on for one night until you are sure there is no effusion and the swelling of the limb has subsided and the pain has gone. Then put the bandage on again gently, and a light plaster; do not bind it up as you did at the first but go gently with it until it heal. If you see that the effusion, inflammation, pain, swelling, and other symptoms are totally gone, and you need to plaster and bandage it, then repeat just as you did at first. But if none of these things that we have mentioned occur, then do not loosen it until after three, four, or five days or a week; sometimes it may be left up to twenty days, depending on how the limb appears to you, as we said, until the fracture be united and the flesh over it be near to joining. Then bandage more tightly than before, and increase the heaviness of the patient's food as has been mentioned. If you see the place of the fracture getting more dry and thin than it should, you may know that nourishment is being prevented from reaching it; so foment it with tepid water each time you loosen it; do this every three days, and ease the bandaging somewhat. This action makes nourishment flow to the limb and it will quickly heal.

What some ignorant bone-setters do is to break the bone again if at first the repair is not as it should be and has mended crookedly. This operation of theirs is mistaken and dangerous; if it were right the Ancients would undoubtedly have spoken of it in their books and would have used it. But I have not found a trace of it in a single one of them; and the right course is not to use it.

fractures; and later, the famous Cheselden in his *Anatomy* quoted Mr. Cowper of Leicester who had cured Cheselden's elbow fracture with bandages dipped in flour and egg-white for the same purpose (13th ed., 1742, p. 38). This is the identical plaster put forward by Albucasis. Mr. Cowper seems to have taught that they be renewed every two weeks. Then the French surgeon,

Baron Larrey, used an albumen and flour mixture for compound fractures during the Napoleonic campaigns before he discovered the still more valuable properties of plaster of Paris. Albucasis therefore seems to have had in his mind some form of firm plaster casing for fractures on the same lines as the modern plaster of Paris casing.

العضو يستريح ساعة ثم تحمل عليه الصوف المودح المغموس في الخل
والزيت او دهن الورد وتربطه عليه ليلة حتى تأمن الورم الحار ويسكن
160 نفخ العضو ويذهب وجعه ثم تعيده الى الشد اللطيف والضماط اليسير
ولا تشده شدة الأول والطف به حتى يبرأ، فإن رأيت أن الورم
والحمرة والوجع والنفخ وجميع الأعراض قد ذهبت أصلا واحتجت الى
الضماط والشد فأعده كما فعلت أولا سواء، فإن لم يحدث في العضو
شيء مما ذكرناه فلا تحله إلا بعد ثلاثة أيام او أربعة او خمسة او
165 سبعة وقد يترك عشرين³⁵ يوما كل ذلك على حسب ما يظهر اليك من
حال العضو كما قلنا حتى اذا لزم الكسر وقارب انعقاد اللحم عليه
فزد أيضا حينئذ في الشد أكثر من شدة الأول كله وزد أيضا في
تغليظ غذاء العليل على ما تقدم ذكره، فإن رأيت موضع الكسر قد
جف وهزل بأكثر مما ينبغي فاعلم أن الغذاء مستع من الوصول اليه
170 فانطله بالماء³⁶ الفاتر عند كل مرة تحله وليكن ذلك في كل ثلاثة أيام
وخفف الشد قليلا فإن بهذا الفعل يجرى الى العضو الغذاء ويبرأ
سريعا،

وأما ما تصنعه الجهال من المجبرين³⁷ من كسر العضو مرة أخرى
إن لم ينجر أولا على ما ينبغي وانجبر على عوج فهو خطأ من فعلهم
175 وغرر عظيم ولو كان صوابا لذكرته الأوائل في كتبهم وعلمت به وما رأيت
لأحد منهم في ذلك أثرا البتة والصواب أن لا يعمل به،

35. خمسين P. 36. incipit lacuna in codice V.

37. الجابرين B.

CHAPTER TWO. On a fracture occurring in the head.

The kinds of fracture occurring in the head are many, of various forms and differing causes. Some fractures are due to a sword-stroke which may cut right through the bone and reach the membrane beneath the bone, like an adze-cut in wood, for which reason this kind of cut is called 'ascial'. Or the sword may cut through part of the bone, only slicing through the surface and not reaching the depth; this kind is called an absolute avulsion. The wounds in these two fractures can be either big or small. There are also some fractures accompanied by smashing or crushing; such as by a blow from a stone or by falling on a stone, and the like. A fracture of this kind will be either penetrating, reaching the membrane beneath the bone; or superficial; the wound in these two fractures may be either big or small. Then there is a type of fracture that is hidden in the bone, as fine as a hair, a thin crack; therefore this kind of fracture is called 'capillary'. There is a fracture due to a fall or a blow from a stone and the like, making a dent in the surface of the bone and a hollow at the site as occurs in a bronze bowl when a blow falls on it and a portion of it is pushed in. This mostly occurs in heads whose bones are soft, as those of children. Any of these kinds of fracture may also have splinters, jagged or otherwise; we shall deal with the treatment of all these in their place. All these kinds of fracture are

الفصل الثانى فى الكسر العارض فى الرأس

أنواع الكسر العارض فى الرأس كثيرة وأشكاله مختلفة وأسبابه متفنة فمن الكسر ما يكون عن ضربة سيف ويكون إما أن¹ يبرى العظم كله الى أن ينتهى الى الصفاق الذى تحت العظم كما يفعل القدم فى الخشب ولذلك يسمى هذا النوع من الكسر قدومياً² وإما أن يكون قطع السيف بعض³ العظم وأبرى وجهه فقط ولم ينفذ القطع الى آخره ويسمى هذا النوع من الكسر قلعا مطلقا ، ويكون جرح هذين الكسرين إما كبيرا وإما صغيرا ، ومن الكسر ما يكون هشما او رصا ويكون سببه ضربة بحجر او سقطه على حجر او نحوه وهذا الكسر يكون إما نافذا قد قارب الغشاء الذى تحت العظم وإما أن يكون فى وجه العظم ويكون جرح هذين الكسرين أيضا إما كبيرا وإما صغيرا ، ومن الكسر ما يكون خفيا فى العظم فى رقة الشعر وهو انصداع يسير ولذلك يسمى هذا النوع من الكسر شعريا⁴ ومنه كسر يكون عن سقطة او صكة حجر ونحوه يدخل صفحة العظم الى داخل ويصير للموضع تقعر كما يعرض لقدر⁵ النحاس⁶ اذا أصابتها ضربة فيدخل⁷ جزء منها⁷ الى داخل وأكثر ما يكون ذلك فى الرأس الرطب العظم كرووس الصبيان ، وقد يكون لجميع هذه الأنواع من الكسر شظايا متبرئة وغير متبرئة وسنأتى بذكر علاج ذلك كله فى موضعه ، ونتعرف جميع هذه الأنواع

1. AHP. عن 2. codd. قدومى 3. B. بعرض 4. codd. شعري

5. B. cett. لعدور 6. P. الفخار 7. B, P s. p. جرمها

diagnosed by laying them bare and investigating them with probes and removing all the lacerated tissues over them. The 'capillary' kind is diagnosed by laying bare the bone, wiping it clean, and rubbing ink on it, when the fracture will appear black.

As to the treatment of the fracture: begin by paying attention to the patient's symptoms. If you observe any symptom clearly indicating something dangerous, such as bilious vomit, convulsion, mental derangement, loss of voice, fainting, high fever, protrusion and inflammation of the eyes, and similar symptoms, then leave the patient alone and do not treat him; for in the majority of cases these symptoms undoubtedly indicate the approach of death. But if you find symptoms that do not alarm you and you see hope of recovery for him, then begin treatment as follows. If he be brought to you immediately after his injury and it be the season of winter, you should try to remove the bone, at all events before the fourteenth day. If it be summer you must hasten to remove the bone before the seventh day, before the covering membrane beneath the bone and over the brain be infected, and before the above-mentioned symptoms occur. If the fracture has already reached the cerebral membrane with fragmentation of the bone and depression, then you must cut out the splintered and broken part as I shall now describe to you. Shave the head of the injured patient and lay the bone bare in any way you can, following the course of the injury and in the manner least grievous to the injured man. If, when you lay the bone bare, you encounter a haemorrhage or abscess, meet the case with suitable remedies; that is, pack the place with dressings soaked in wine and oil of roses, and cleanse the wound until the swelling subsides and you are safe

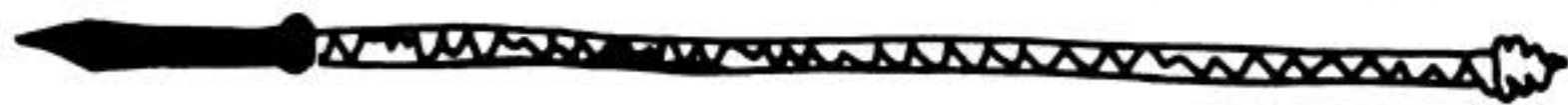
من الكسر بالكشف عليها وتفتيشها بالمسابير وانتزاع اللحم الفاسدة من
 20 عليها ، وأما النوع الشعري فيعرف بأن يكشف على العظم ويمسح
 ويلطخ عليه بالمداد فإن الكسر يظهر أسود ،
 وأما علاج الكسر فتتظر أولا الى أعراض العليل فإن رأيت من
 أعراضه ما يدل دلالة ظاهرة على الخوف مثل قيء المرار والامتداد
 وذهاب العقل وانقطاع الصوت والغشى والحقى الحادة وجهوظ العينين
 25 وحمرتها ونحوها من الأعراض فلا تقرب العليل ولا تعالجه فإن الموت
 واقع به مع هذه الأعراض في أكثر الأحوال لا محالة ، وإن رأيت
 أعراضا لا تهولك ورجوت له السلامة فحينئذ فخذ في علاجه وذلك «أنه»
 إن أتاك المجرع في أول ما جرح وكان ذلك في أيام الشتاء فينبغي
 أن تجتهد في نزع العظم قبل اليوم الرابع عشر على كل حال وإن
 30 كان في أيام الصيف فينبغي أن تسرع بنزع العظم قبل اليوم السابع
 من قبل أن يفسد ما تحت العظم من الغشاء فتعرض تلك الأعراض
 التي وصفنا ، فإن كان كسر العظم قد بلغ الى الغشاء المغشى على
 الدماغ وكان مع هشم ورش فينبغي أن تقطع الجزء المنهشم المروض
 على ما أنا واصفه لك ، وهو أن تحلق رأس العليل المجرع وتكشف
 35 عن العظم على أي وجه يتمكن لك وعلى حسب شكل الجرح وما يخف
 على العليل ، فإن عرض لك عند الكشف على العظم نزف دم أو ورم
 حار فقابل ذلك بما ينبغي وهو أن تحشو الموضع بخرق مغموسة في
 شراب ودهن ورد⁽⁸⁾ ونق الجرح⁽⁸⁾ حتى يسكن الورم وتأمين النزف ، ثم

8. B, cett. وعر الجرح H, ونفج B.

from haemorrhage; then begin the trepanning and removal of the bone. This may be done in one of two ways. One way is to cut the bone with a fine-bladed chisel, this being the figure of it (fig. 188). Then after this one employ another chisel, a little broader. It is figured here (fig. 189). Then use yet another chisel still broader than the second. You should have by you a number of different chisels, some broader than others and some shorter than others; their tips should be exquisitely sharp; and they should be made of Indian iron or best steel. Let the strokes upon the chisel be gentle lest the head be shocked or injured. If the bone be strong and hard you should, before you use the chisel, make perforations round about it with drills called 'non-sinking' drills. Their name of non-sinking drills is due to their not piercing the cranial bone through to what is beneath, because the drill has a circular margin beneath its sharp head like a small collar or wheel, that prevents it from sinking in and going beyond the thickness of the bone.¹

¹ The somewhat corrupt reading of M is intended to mean 'because the blade of the drill is sunk into the wooden handle and protrudes only by an amount equal to the thickness of the bone'. The scribe of B seems to have made an interesting Freudian slip; for *al-hādd* 'sharp' he has written *ijād* 'invention'.

تأخذ في تقوير العظم وانتزاعه وذلك يكون على أحد وجهين — من
 40 العمل أما الوجه الواحد فهو أن تقطع العظم بمقطع لطيف ضيق
 الشفرة وهذه صورته:



Marsh



Huntington

Fig. 188

ثم تستعمل مقطعا آخر بعد هذا المقطع أعرض منه قليلا وهذه
 صورته:



Huntington

Fig. 189

ثم تستعمل أيضا مقطعا آخر أعرض أيضا من الثاني⁹ والواجب¹⁰ أن
 45 تكون عندك عدة مقاطع مختلفة تكون بعضها أعرض من بعض وبعضها
 أقصر من بعض وتكون في غاية من حدة أطرافها ولتكن من حديد
 هندی أو فولاد جيد، واستعمل الرفق في الضرب على المقطع لئلا
 تنزع الرأس فتؤذي، فإن كان العظم قويا صلبا فينبغي أن تشق
 حوله قبل استعمالك المقاطع بالمشاقب التي سمّوها مشاقب غير غائصة
 50 وإنما سمّوها مشاقب غير غائصة لأنها لا تجاوز حدّ عظم القحف إلى ما
 وراءه من أجل أن¹¹ للمثقب حرفا مستديرا على ما دون رأسه الحاد¹²
 شبيها بالطوق أو الدائرة الصغيرة يمنع من أن يغوص ويجاوز شخن¹¹

9. cett. والوجه P, والوجه الآخر M, 10. BP. «وهذه صورته» 9.

حديد المثقب الذي تشق فيه غايضا في النصاب الخشب لا طهر 11.

P. المساد B, ايجاد 12. M. منهما لمقدار نحو ذلك

You must obtain a large number of these drills each of which will suit a certain thickness of bone; so that for each skull you have a drill whose pointed extremity is of a length to suit the thickness of that skull. Here are figured three kinds of drill, large, medium, and small (fig. 190).

As to the manner of perforation round the fractured bone, you apply the drill to the bone and revolve it with your fingers until you know that the bone is pierced, then you transfer the drill to another place, making the distance between the perforations about the thickness of a probe. Then with the chisels cut out the bone between the perforations, using the utmost delicacy, as we have said. Then take out the bone, either with your hand or with some other instrument you have ready for the purpose, such as forceps or fine tongs. You will have to observe the utmost caution that neither drill nor chisel touch any part of the membrane. When you have cut the bone circularly, free from the membrane if adherent to it, and have

العظم، وينبغي لك أن تتخذ من هذه المشاقب عدة كثيرة يصلح كل واحد منها لمقدار ثخن ذلك العظم حتى يحضرك لكل قحف مشقبة 55 مقدار طرفه الحاد في الطول والقصر على مقدار ثخن ذلك القحف، وهذه صورة ثلاثة أنواع من المشاقب كبير ومتوسط وصغير:



Marsh

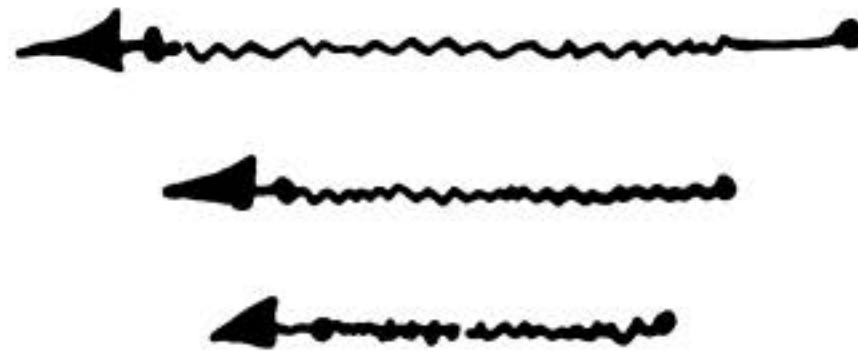


Fig. 190

Huntington

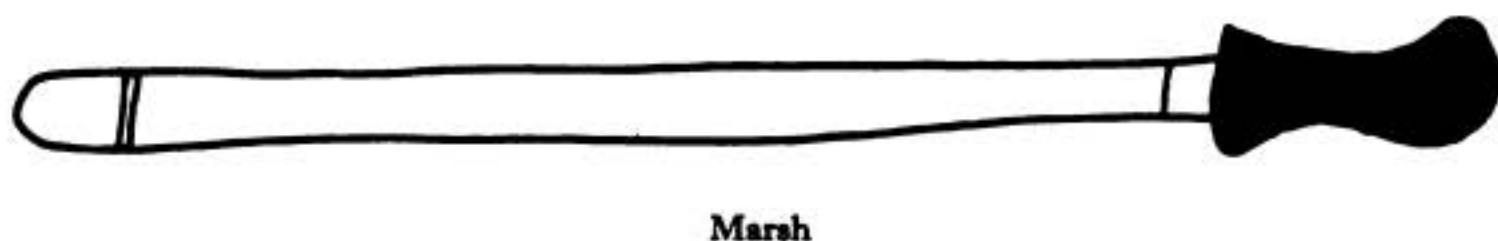
وأما كيفية الثقب حول العظم المكسور فهو أن تجعل المشقبة على العظم وتديره بأصابعك حتى تعلم أن العظم قد نفذ ثم تنقل المشقبة الى موضع آخر وتجعل بعد ما بين كل ثقب قدر غلظ المروء 60 او نحوه، ثم تقطع بالمقاطع ما بين كل ثقبين وتفعل ذلك بغاية ما تستطيع عليه من الرفق كما قلنا حتى تطلع العظم إما بيدك وإما بشيء آخر من بعض الآلات التي أعددت لذلك مثل الجفت والكلايب اللطاف، وينبغي أن تحذر كل الحذر أن يمس المشقبة او المقطع شيئاً من الصفاق، فإذا قوت العظم وتبرأ من الصفاق إن كان

removed it, then you will have to scrape away and smooth out all the roughness in the remaining bone with another instrument, resembling a chisel, except that it must be finer and slenderer than any of them. If there are any little bits or spicules of bone left, pick them out with whatever instrument you can, gently; and then treat the wound with dressings and ointments as we shall describe.

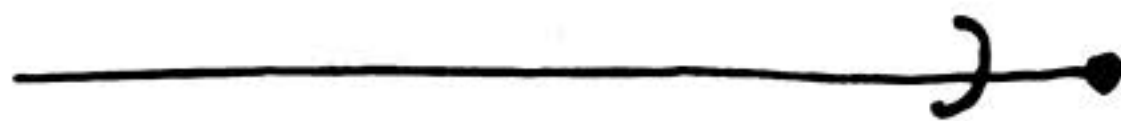
The other way of operating is altogether easy and free from danger; Galen mentioned it and greatly praised it; these are his words: You should begin by laying bare that part of the bone where the fracture is severest and most obvious; when you have done so, place under it the tip of this lenticular chisel figured here (fig. 191). The lenticular part of it should be smooth and not for cutting, the sharp part of it being on both sides longitudinally, as you see; so that the lenticular part is resting upon the meninges

65 ملصقا به وأخرجته فينبغي أن تجرد وتسوى خشونة ما بقى فى العظم
 بآلة أخرى تشبه المقطع إلا أنها ينبغي أن تكون أرق والطف من
 سائر المقاطع، فإن بقى شئ من العظام الصغار والشظايا فتأخذها
 برفق بما عندك من الآلات ثم تعالج الجرح بعد ذلك بالقتل والمراهم
 التى يأتى ذكرها،

70 وأما الوجه الآخر من العمل فهو وجه سهل البتة بعيد من
 الغرر ذكره جالينوس ومدحه مدحا عظيما وهذا قوله، ينبغي لك أولا
 أن تبدأ بكشف جزء¹³ العظم من الموضع الذى الكسر¹⁴ فيه أشد وأشهر
 حتى اذا كشفت ذلك الجزء صيرت تحته طرف هذا المقطع العدسى
 وهذه صورته:



Marsh



Huntington

Fig. 191

75 يكون الجزء العدسى منه أملس لا يقطع شيئا والجزء الحاد منه
 فى جوانبه الذاهبة فى الطول كما ترى ليكون¹⁵ الجزء العدسى مستندا¹⁵

M. الغشا مستديرا 15. cett. انكسر 14. B. M. الجرح على 13.

while the cutting surface is on the bone. Then with a small hammer strike the tool on one side until you gently cut through the bone in a circle, in the confident knowledge that nothing untoward can happen to the membrane even though the operator be the most ignorant and cowardly of men; yes, even if he be sleepy. If any membrane stick to any part of the bone, strip it off with the lenticular tip of the chisel and free it gently from it, for it will come away without harm or danger.

If it be a fracture of the bone not reaching to the meninges, only the surface of the bone being separated, and there remain some roughness and fine splinters, you should smooth down the roughness and remove the splinters with fine scrapers, of which you should have a number, of varying sizes so that you can use the one best fitted and most suitable, in the light of what is suggested by your operative method and the broken bone itself and its shape. When you smooth the bone you must first use the broadest of the scrapers and then a finer one, and so on until you come to use the finest and slenderest of all.

As to the rest, the little capillary fractures and fine fissures, you will have to apply to each of them that treatment that will bring about a perfect repair. This is obvious to anyone who has the least practice in this art and is acquainted with what we have written in explanation of the big fractures.

If the meninges are left bare when you remove the bone, you should take

الى¹⁶ الصفاق ووجه المقطع الحادث في العظم ثم تضرب على المقطع من
 "جهة واحدة"¹⁷ بمطرقة صغيرة حتى تقطع جميع العظم برفق كما يدور
 وأنت في أمن من الغشاء لا يحدث فيه حادث مخوف البتة ولو أن
 80 المعالج أجهل الناس وأجنبهم نعم ولو كان ناعسا، فإن بقى شئ
 لازم للعظم من الغشاء في بعض مواضع العظم فقصه عنه بطرف
 المقطع العدسي نفسه وتخلصه عنه برفق فإنه يتخلص عنه بلا أذى ولا
 خوف،

وَأَمَّا إِنْ كَانَ كَسْرُ الْعِظَمِ لَمْ يَنْفِذْ إِلَى الْغِشَاءِ وَكَانَ الَّذِي انْقَطَعَ
 85 مِنَ الْعِظَمِ وَجْهَهُ وَبَقِيَتْ فِيهِ خَشُونَةٌ وَشِظَايَا لَطَافٌ فَيَنْبَغِي أَنْ تَجْرِدَ
 تِلْكَ الْخَشُونَةَ وَتَقْلَعَ تِلْكَ الشِظَايَا بِجَارِدٍ لَطَافٍ قَدْ اتَّخَذْتَ مِنْهَا عِدَّةَ
 مُخْتَلِفَةٍ الْمَقَادِيرِ لِيُمْكِنَكَ أَنْ تَسْتَعْمَلَ مِنْهَا فِي كُلِّ مَوْضِعٍ أَوْفَقَهَا
 وَأَصْلَحَهَا عَلَى حَسَبِ مَا يَقُودُكَ إِلَيْهِ الْعَمَلُ وَنَفْسُ الْعِظَمِ الْمَكْسُورِ وَشَكْلُهُ،
 وَيَنْبَغِي أَنْ تَسْتَعْمَلَ فِي جَرْدِكَ أَوَّلًا لِلْعِظَمِ أَعْرَضَ تِلْكَ الْجَارِدِ ثُمَّ
 90 اسْتَعْمَلَ بَعْدَهُ أَدَقَّ مِنْهُ وَلَا تَزَالِ تَفْعَلِ ذَلِكَ عَلَى الْوَلَاءِ حَتَّى تَصِيرَ
 إِلَى اسْتِعْمَالِ أَدَقِّهَا وَأَرْقَّهَا كُلِّهَا،

وَأَمَّا سَائِرُ الشَّقُوقِ الصَّغَارِ الشَّعْرِيَّةِ وَالْكَسْرِ اللَّطِيفِ فَيَنْبَغِي أَنْ
 تَسْتَعْمَلَ فِي كُلِّ وَاحِدٍ عِلَاجًا عَلَى حَسَبِ مَا يُوَدِّي إِلَى صِلَاحِهِ وَهُوَ
 شَيْءٌ لَا يَخْفَى عَلَى مَنْ لَهُ فِي هَذِهِ الصَّنَاعَةِ أَدْنَى دَرَجَةٍ وَوَقَفَ عَلَى مَا
 95 كَتَبْنَا وَبَيَّنَّا فِي الْكُسُورِ الْكِبَارِ،

فَإِنْ بَقِيَ الْغِشَاءُ مَكْشُوفًا عِنْدَ قَلْعِكَ الْعِظَمِ فَيَنْبَغِي أَنْ تَأْخُذَ

16. M. على 17. M. الجهة الاخرى 18. finis lacunae in codice

M. وشق 19. V.

a linen dressing measured to the wound, soak it in oil of roses,¹ and apply it to the opening of the wound; then take another dressing, folded in two or three, soak it in wine and oil of roses and apply it over the first with the utmost gentleness so as not to press upon the meninges; then employ a broad bandage on top, but tighten it only enough to keep the wound covered. Leave it with this dressing on for a day or two until you are sure there is no abscess; then loosen it and apply desiccant remedies such as lily roots, vetch-flour, powdered frankincense, birthwort, and the like. The method is that you make a powder of these drugs and sprinkle it, dry as it is, upon the wound; in short, in these cases use drugs whose nature is cleansing and not irritating. In this be most diligent, that the wound, while you are treating it, be clean; nor let there be any dirty vestiges of ointment in it or any filth; and let no pus collect in it; for when pus collects on the meninges it corrupts them and renders them necrotic, which causes great harm to the patient. Sometimes the surface meninges go black when the bone is removed, especially when the treatment of them is neglected; so observe, and if the patient exhibit any of the symptoms that we have mentioned you may know that he is undoubtedly doomed. But if the blackness be due to some medicament applied to it, which has the power to produce blackness of that kind, then you should take one part of honey and three parts of oil of roses, beat them well up together, spread on a cloth and apply it to the membrane; then treat as necessary until cured.

¹ H reads 'in wine and oil of roses'; B 'in wine or oil of roses'.

خرقة كنان على قدر الجرح وتغمسها في دهن²⁰ ورد وتضعها على فم
 الجرح ثم تأخذ خرقة أخرى مثنية أو مثلثة وتغمسها في شراب ودهن
 ورد وتضعها على الخرقة الأولى وتصنع ذلك بأخف ما تقدر عليه لئلا
 100 تثقل الصفاق ثم تستعمل من فوق رباطا عريضا ولا تشده إلا بقدر ما
 يمسك الجرح فقط، وتدعه بهذا العلاج يوما أو يومين حتى تأمن
 الورم الحار ثم تحله وتستعمل بعد ذلك الأدوية التي معها فضل ييس
 مثل أصول السوسن ودقيق الكرستة ودقاق الكدر والزراوند ونحوها
 وهو أن تصنع من هذه الأدوية ذرورا وتذر على الجرح كما هي يابسة
 105 وبالجملة فاستعمل في ذلك دواء من شأنه أن يجلو ولا يلذع، وتحري
 جهدك في حين علاجك للجرح أن يكون نظيفا لا يكون فيه ضرر
 الدهن ولا وسخ ولا تترك الصديد يجتمع فيه البتة لأن الصديد إذا
 اجتمع على غشاء الدماغ أفسده وعقنه فحدث من ذلك على العليل
 بلية عظيمة، وقد يعرض في صفاق الرأس عند ما ينكشف عنه العظم
 110 ولا سيما إذا غفل عن علاجه سواد في سطحه نظرت فإن عرض للعليل
 الأعراض التي ذكرنا فاعلم أنه هالك لا محالة، وإن كان السواد إنما
 حدث عن دواء وضع عليه وكان في قوة ذلك الدواء أن يفعل ذلك
 السواد فينبغي أن تأخذ من العسل جزأ ومن دهن الورد ثلاثة
 أجزاء وتضربهما ضربا جيدا وتلطخ بهما خرقة ثم تضعها على الصفاق
 115 ثم تعالجه بأنواع العلاج الذي ينبغي حتى يبرأ،

B. شراب أو دهن H, شراب ودهن 20.

CHAPTER THREE. On the repair of a broken nose.

You should know that the only portion of the nose that can break is the upper portion in its entirety or in one of its two parts; for it consists of two bones. The lower portion is cartilaginous and unbreakable; what can happen to it is contusion, twisting, or flattening. If one of the two (upper) parts be broken you should pass your little finger into the nostril and straighten out the fracture from inside, with your index and thumb outside, until you reduce the nose to its natural shape; do it gently, and take care that you do not cause the patient pain in doing it. If the fracture be in the upper part of the nose and your finger does not reach it, it should be evened by means of a probe with some thickness to it. If the break be on both sides, follow the same course. Haste must be made to set it on the first day if possible; but if not, after the seventh or tenth day when the effusion has subsided. Then introduce into the nasal foramen a linen pad, if it be a unilateral fracture, or two pads if it be bilateral; the pads should be thick enough to fill the nasal foramen. Certain of the ancient bone-setters suggest that you should soak the pads in butter and change them daily, but I do not think so; you should rather soak them in egg-white made up into a paste with mill-dust; then leave the pads in until the bone is firm and the cartilage hardens. Sometimes, instead of pads, the stems of goose-quills are introduced into the nose after being wound round with a piece of soft cloth, so as to make a stronger support for the fracture of the nose and not to hinder the patient's breathing. This is not absolutely necessary; do it if you prefer;

الفصل الثالث فى جبر الأنف اذا انكسر

اعلم أنه لا ينكسر من الأنف إلا شقاء¹ العليا² جميعا أو أحدهما من أجل أنهما عظامان لأن الأسفل منه غضروفى لا ينكسر وإنما يعرض له الرض والعوج والفتسة، فإن انكسر أحد شقيه فينبغى أن تدخل الأصبع الصغيرة فى ثقب الأنف وتسوى ذلك الكسر من داخل بأصبعك السبابة والإبهام من خارج حتى ترّد الأنف على شكله الطبيعى وليكن ذلك منك برفق وتحرّى أن لا يحدث بفعلك ذلك على العليل وجع، فإن كان الكسر فى أعلى الأنف ولم تلحق اليه الأصبع فينبغى أن يسوى بطرف مرود فيه غلظ قليلا، فإن كان الكسر فى الجهتين فافعل³ مثل ذلك، وليبادر بجبره فى اليوم الأول من الكسر إن أمكن وإلا فبعد اليوم السابع أو العاشر عند سكون الورم الحار، ثم تدخل فى ثقب الأنف فتيلة من خرق الكتان إن كان الكسر فى الجهة الواحدة أو تدخل فتيلتين إن كان الكسر فى الجهتين ولتكن الفتلة فيها غلظ على قدر ما يملأ ثقب الأنف، وذكر بعض المجبرين من الأوائل أن تبّل الفتلة بالسمن وتبدل فى كلّ يوم ولست أرى أنا ذلك بل ينبغى أن تبّل الفتلة فى بياض البيض معجونا بغبار الرحى ثم تترك الفتلة حتى يثبت العظم ويصلب الغضروف، وقد تدخل فى الأنف موضع الفتلة أنابيب ريش الإوز بعد أن تلف عليها خرق لينة فيكون حبسها لكسر الأنف أشدّ ولئلا يمتنع العليل من التنفّس وليس هذا شيئا

1. M. الشعبه، S. شعبته، V. سعبه، HP. سفه، A. شقيه، B. شعاه. 2. M. P. القتال. 3. cett. الأعلى

or, if you prefer, put in pads. If during your operation an abscess occurs, apply to the nose a wax plaster or cotton wool soaked in vinegar and oil of roses or a little diachylon ointment. If no abscess occurs you should apply externally a plaster of white flour and frankincense made into a paste with egg-white; then put on top some soft tow, but do not bind up the nose at all.

If the nasal bones are broken into small pieces or crushed, you should cut down upon them, remove them with a suitable instrument, and then suture the incision and dress with suitable ointments which encourage granulation and scarring.

If there occur an internal wound of the nose, you should dress it with pads and employ leaden tubes until it heals.

20 ضروريًا إن شئت صنعته وإن شئت صنعت الفتائل، فإن عرض للأنف
 في خلال عملك ورم حارّ فضدّ الأنف بالقيروطي أو بقطنة مغموسة في
 خلّ ودهن ورد أو شىء من مرهم الدياخيرون، فإن لم يعرض ورم
 حارّ فينبغى أن تضدّه من خارج بدقيق السميد ودقاق الكندر قد
 عجنا ببياض البيض ثمّ تضع عليه مشاقة لينة ولا تربط الأنف بشىء
 البتّة،

25 فإن انكسرت عظام الأنف كسرا صغارا أو تفتتت فينبغى أن تشقّ
 عليها وتخرجها بالآلة التى تصلح لها ثمّ تخط الشقّ وتعالجه بما
 يلحم ويدمل من المراهم الموافقة لذلك،
 فإن حدث فى داخل الأنف جرح فينبغى أن تعالجه³ بالقتل
 30 وتستعمل⁵ أنابيب الرصاص حتى يبرأ،

M, بقتل تستعمل على 5. P. ا//ا//ا, V, المقاتل, AB, المقاتيل 4.
 B. بالقتل ويستعمل لها.

CHAPTER FOUR. On the repair of a broken lower jaw.

When the lower jaw is broken and it is a fracture without an open wound, examine it. If it is merely an external fracture, not broken in two but sunken inwards, which is easily recognized, you should introduce the index of your left hand into the patient's mouth if it be a right-hand fracture; but your right index if it be a left-sided fracture; and with this, from within, push the concavity of the fracture gently outwards, with the other hand outside, regulating the correction.

If the break in the jaw be total, into two, traction must be employed, in a straight line on both sides, until it can be set.

If any of the teeth be loosened or broken away, bind those that you hope may be preserved with a gold or silver or silken ligature; then put wax upon the fractured mandible, and upon that a doubled dressing, and upon the dressing a large and strong splint or a piece of shoe-sole leather, the length of the jaw; then over that bandage in such wise as you conveniently can and as will conduce to drawing it together so as not to loosen. Bid the patient hold himself quiet and still, and let his food be soft broths. If you think there is any change of form at all, hasten to loosen it on the third day; then correct the change and apply a plaster of mill-dust and egg-white, or of white flour, after you have removed the wax from it, applying soft tow over the plaster. So long as the plaster sticks on it and the bone undergoes no change of state, let it be and do not loosen until it heals and the fracture

الفصل الرابع في جبر اللحي الأسفل اذا انكسر

اذا انكسر اللحي الأسفل ولم يكن كسره مع جرح نظرت فإِنْ كان كسره من خارج فقط ولم ينكسر باثنين وتقعّر الى داخل فإِنْ معرفته تسهل فينبغي أن كان الكسر في الشقّ الأيمن أن تدخل الأصبع السبّابة من اليد اليسرى في فم العليل وكذلك إن كان الكسر في الشقّ الأيسر فتدخل السبّابة من اليد اليمنى وترفع به حذبة الكسر من داخل برفق الى خارج ويدك الأخرى من خارج المعظم تحكم بها تسويته،

فإن كان كسر الفك قد انقصف باثنين فينبغي أن يستعمل المدّ من الناحيتين على استقامة حتى تتمكن تسويته،¹⁰

فإن كان قد حدث في الأسنان تررع أو تفرّق فشدّ ما طممت منها أن تبقى بخيط ذهب أو فضة أو ابريس ثم تضع على اللحي المكسور القيروطي ثم تضع عليه خرقة مثنية وتضع على الخرقة جبيرة كبيرة محكمة أو قطعة جلد نعل مساو لطول اللحي ثم تربطه من فوق على حسب ما يتبيّن لك ربطه ويوافق ضمّه حتى لا ينتفض وتأمّر العليل¹⁵

بالتروّع¹ والسكون وتجعل غذاؤه الأحساء اللينة، فلن ظننت أنه قد تغيّر شيء من الشكل بوجه من الرجوه فبادر بحله في اليوم الثالث ثم تصلح ما تضمه بغير الرحي مع بياض البيض أو بدقيق السميد بعد نزك القيروطي عنه وتضع على الضماد مشاة لينة، فما دام يلمص ذلك الضماد عليه ولم يتغيّر² للمعظم حال² فاتركه لا تحله حتى يبرأ²⁰

المعظم عن حاله M، المعظم بحال 2. cett. بالهدو B، بالهدر 1. P، B.

mends, for often a fracture of this kind mends in three weeks. If during that time an effusion occurs, employ those means of allaying this that we have often mentioned, until the swelling subsides.

If the fracture be with an open wound, examine it, and if one or more splinters have been detached from the bone, gently remove the pieces of splinter with any suitable instrument. If the opening of the wound be narrow, open it up with a scalpel as much as you need. When you have removed these pieces, letting no trace of them remain, suture the opening of the wound if it is wide; otherwise apply one of the ointments that are suitable for that purpose and will encourage the growth of flesh over the wound, until it heals.

ويشتد الكسر فكثيرا ما يشتد هذا الكسر في ثلاثة أسابيع، فإن عرض
في خلال ذلك ورم حار فاستعمل ما ذكرناه مرارا في تسكينه حتى
يذهب ذلك الورم،

وأما إن كان الكسر مع جرح نظرت فإن كان قد تبرأت من العظم
25 شظية أو شظايا فتلطف في انتزاع تلك الشظايا بما يتفق لك نزعها من
الآلة، فإن كان فم الجرح ضيقا فوسعه بالمبضع على قدر حاجتك،
ثم إذا انتزعت تلك الشظايا ولم يبق منها شيء فخط فم الجرح إن
كان واسعا وإلا فاحمل عليه أحد المراهم التي تصلح لذلك وتلحم
الجرح حتى يبرأ،

3. B, cett. تبرت.

CHAPTER FIVE. On the repair of a broken collar-bone.

The collar-bone is very often broken from the end of the humerus anteriorly, and the fracture of it may be in one of three ways. It may be broken and separated into two without splintering; this is the easiest to repair. Or else splintering occurs, which is most difficult to repair. Or it is a compound fracture. When it is a simple fracture the operation involves having two assistants present; one of them to hold steady the arm adjacent to the fractured clavicle, and the other to stretch the neck in the opposite direction. Then level the fracture with your fingers until it is reduced to its proper form and there is neither prominence nor concavity. If there is need of still greater extension, place in the armpit of the patient a ball of cloth or wool¹ made to a suitable size; and stretch and lift up the clavicle and squeeze the roll with your hand until the fracture is set in the proper way. If you are unable to draw the extremity of the clavicle outwards on account of its being depressed, the patient will have to lie on his back and there must be put under his shoulder a medium-sized bolster. The assistant is to press the shoulder down until the depressed collar bone is elevated, and then you can set the fracture and even it out with your fingers. If you feel a splinter separated from the clavicle and movable, you must cut down upon the splinter and gently remove it. If the splinter sticks to the bone, you must contrive to cut it with one of the chisels you have prepared for that, having first put beneath the clavicle the instrument to protect the membrane; an

¹ B adds 'after returning his arm behind him'.

الفصل الخامس في جبر الترقوة اذا انكسرت

اكثر ما تنكسر الترقوة من قدام من نهاية المنكب وكسرها يكون على أحد ثلاثة أوجه إما أن تنكسر وتنقصف باثنين من غير أن تحدث فيها شظايا وهو أسهل لجبرها وإما أن تحدث في الكسر شظايا وهو أصعب للجبر وإما أن يكون الكسر مع جرح ، والمعمل فيه اذا كان الكسر من غير جرح أن تحضر خادمين ليضبط أحدهما العضد الذي يلي الترقوة المكسورة والآخر يمدّ العنق نحو الجهة الأخرى ، ثم تسوى الكسر بأصابعك حتى يصير شكله على ما ينبغي ولا يكون فيه نتو ولا تعقير ، فإن احتجت الى مدّ اكثر فينبغي أن تضع تحت إبط العليل كرة¹ من خرق أو صوف² ويكون عظمها على قدر حاجتك وتمدّ وترفع الترقوة وتضغط الكرة بيدك حتى يسوى الكسر على ما ينبغي ، فإن لم تقدر أن تجذب طرف الترقوة الى خارج من أجل أنها صارت الى العمق فينبغي أن يستلقي العليل على قفاه وتوضع تحت منقبه مخدة متوسطة في المعظم ويكبس الخادم منقبه الى أسفل حتى يرتفع عظم الترقوة الذي في العمق الى فوق فحينئذ فاصلع الكسر وسوّه بأصابعك¹⁵ فإن أحسست أنه قد انكسرت شظية من الترقوة وصارت تتحرك فينبغي أن تشقّ عليها وتخرج تلك الشظية برفق فإن كانت الشظية محتسبة في المعظم فتحويل في قطعها بأحد المقاطع التي أعددت لذلك بعد أن تعير تحت الترقوة الآلة التي تحفظ الصفاق وهي آلة من خشب أو

B. > بعد ان ترد ذراعه الى وراه < 2. M. اكروه , V. كوره 1.

instrument made of wood or iron, of which this is the figure (fig. 192). It resembles a spoon but without a hollow. It should be as broad as you need, having regard to the size of the bone, and as long as you can use at operation. As you see, it should be provided with one wide and one narrow extremity. If the opening you made when you extracted the splinter of bone be wide and you feel safe against an abscess, suture the edges together. But if the opening be small or you fear an abscess, pack the wound with material and pads proportional to the opening. If an abscess occur, soak the dressing with oil of roses and vinegar or wine and apply.

As to bandaging the bone when it is without wound or incision, it is thus: apply over the bone the plaster composed of mill-dust with egg-white and put over it soft tow; then put a pad in his axilla if necessary; then take

20 من حديد وهذه صورتها :



Marsh



Huntington

Fig. 192

تشبه ملعقة ليس لها تعقير ويكون عرضها على حسب ما تحتاج
اليه من كبر العظم وصغره وأما طولها فعلى حسب أيضا ما يكتنك
للعمل³ ولتكن ذات طرفين كما ترى الطرف الواحد أوسع⁴ والآخر أضيق⁵
فإن كان خرق الجرح الذى شقت عند إخراجك لشظية العظم واسعا
وأمنت الورم الحار فاجمع شفتى الجرح بالخياطة وإن كان الخرق
يسيرا أو خشيت الورم الحار فاحش الجرح بالخرق والرفائد على قدر
شق الجرح ، فإن عرض ورم حار قبل الخرق فى دهن الورد والخل
أو الشراب واحمل عليه

وأما شد العظم اذا كان من غير جرح ولا شق فهو أن تحمل
على العظم الضماد المتخذ من غبار الرعى مع بياض البيض وتضع
المشاقة اللينة عليه ثم تضع الكرة تحت إبطه إن احتاج الى ذلك ثم

3. العمل BM. 4. MV, cett. واسع. 5. MV, cett. ضيق.

a very long sling about a span broad; then place a doubled pad over the tow and plaster; then take a splint made of thin board; its width should be three fingers and its length the same; then wrap it in a rag; then wrap the rag together with the splint in that part of the sling that is over the site of the fracture; then tie the sling round the fracture and wind it round his neck and under his sound axilla and under his injured axilla and carry it several times in every direction as you judge best that the bandaging will hold the fracture firmly, for it will be apparent to you. The whole point is that the splint should not slip from over the fracture; so you should examine the patient every day, and whenever the bandage has loosened and you see the splint has shifted, then put it right and tighten the bandage. Make the patient sleep lying on his back, and at night when he is asleep place a small bolster under the axilla so as to raise his arm from his side, for with the raising of the humerus the fracture of the clavicle will be elevated. Or bind his arm to his neck. Do not loosen the bandage for twelve days unless there arise at the place any pruritus or swelling. Then renew the plaster if you think it necessary, and bandage again and leave until the fracture of the collar-bone is set and knits. The majority of these cases are firm and strong in twenty-eight days, though in some people it takes less.

تأخذ عمامة تكون طويلة جدًا ويكون عرضها شبرا او نحو ذلك ثم احمل
رفادة مثنية على المشاقة والضامد ثم خذ جبيرة من لوح رقيق يكون
عرضها ثلاث اصابع وفي الطول كذلك ثم ادرجها في خرقة ثم ادرج
35 تلك الخرقة مع الجبيرة في الموضع من العمامة الذي يقع على موضع
الكسر ثم شد العمامة على الكسر كما تدور والوها على عنقه وتحت
إبطه الصحيح وتحت إبطه المريض وردّها مرّات على كلّ جهة وكيف
رأيت أنّ الشدّ يضبط الكسر ضبطا محكما وهو ما لا يخفى عليك،
ومدارك كلّه أن لا تنزل الجبيرة من على العظم المكسور ولذلك ينبغي
40 أن تتفقد العليل في كلّ يوم فكلّما استرخى الرباط ورأيت الجبيرة قد
زالت فأصلح ذلك وشدّ الرباط، ثم اجعل نوم العليل على ظهره
واجعل تحت إبطه عند نومه بالليل مخدّة صغيرة ليرتفع بها عضده
عن جنبه فيرتفع كسر الترقوة بارتفاع المنكب او تربط ذراعه الى عنقه،
ولا تحلّ الرباط إن لم يحدث في الموضع حادث من حكة او ورم الى
45 اثني عشر يوما، ثم جدّد الضامد إن رأيت وجهها لذلك وردّ⁷ في
الشدّ واتركه حتى ينجبر ويتعقّد كسر⁸ الترقوة، ويشدّ⁹ ويقوى أكثر ذلك
في ثمانية وعشرين يوما وقد يكون في بعض الناس في أقلّ من ذلك،

6. BMV. وكسر. 8. H. وزده، BPV. وزد. 7. codd. التي. 6.

9. BMPV. يشد.

CHAPTER SIX. On the repair of a fracture of the scapula.

The scapula is rarely fractured in the broad part but it does break at its margins. When any part of it is broken or it breaks in the middle (which is recognized by palpation) you should attempt the correction of the fracture according to the shape it takes, and its restoration to its natural form, by whatever means you can. Then apply over the place mill-dust with egg-white, and soft tow; and over that a dressing made of a folded cloth; and over that a broad splint made of thin board to the size of the whole scapula or a little wider. If there be beneath the splint a hollow in any part of the scapula, level it with soft tow so that the splint rests evenly. Then bind tightly over it a long sling and make sure that the splint does not slip out of place. Examine the bandage daily; and whenever it gets loose tighten it and adjust the splint if it has shifted. The patient should lie on his sound side. The scapula mends in twenty or twenty-five days. When this time has elapsed you may safely loosen the bandaging, for this is one of the bones in which there is no danger of fragmentation or cracking. If a splinter of bone protrudes and starts to prick under the skin, cut down upon it and remove it, and do as I said under fracture of the collar-bone, to allay the effusion, if anything of that kind happen.

الفصل السادس في جبر كسر الكتف

قل ما تنكسر الكتف في الموضع العريض منها وإنما تنكسر منها
حروفها ، فمتى ما انكسر منها موضع او انكسرت في وسطها وإنما
يعرف ذلك باللمس فعلى حسب ما يكون شكل الكسر فرم تسويته وردّه
5 على شكله الطبيعي بكل وجه من الحيلة يمكنك ، ثم احمل على الموضع
غبار الرحي مع بياض البيض والمشاقة اللينة وضع من فوق رفادة من
خرقة مشية ثم ضع عليه جبيرة عريضة من لوح رقيق على قدر الكتف
كلها او اوسع منها قليلا ، فإن كان تحت الجبيرة تعقير في موضع
من مواضع الكتف فسوّ ذلك التعقير بمشاقة لينة حتى تنزل الجبيرة
10 على استواء ، ثم شدّ من فوق بعمامة طويلة شدا محكما واستوثق من
الجبيرة حتى لا تزول عن موضعها ، وتفقد الرباط في كل يوم فكلما
استرخى الرباط شدّدته وسوّيت الجبيرة إن زالت عن موضعها ، وليكن
اضطجاع العليل على جنبه الصحيح ، والكتف تنجبر في عشرين يوما
او خمسة وعشرين يوما فإذا كملت هذه العدة فحلّ الرباط وأنت في
15 أمن فإنها من العظام التي لا يتخوف هشمها ولا انتقاضها ، فإن برز
من العظم شظية وكانت تنخس تحت الجلد فشق عليها وانتزعها واصنع
ما ذكرته في كسر الترقوة من تسكين الورم الحارّ إن حدث شيء من
ذلك ،

CHAPTER SEVEN. On the repair of a fracture of the breast.

The breast is sometimes fractured in the middle but this happens rarely; more often it is the extremities of it that are broken and comminuted. The symptoms that occur when it is broken in the middle are that he bows downwards and suffers violent pain, difficulty in breathing, and coughing, and sometimes he vomits blood; and there is an obvious and palpable concavity in the bone. Now the way to mend it is for the patient to lie on his back, and you place a pillow between his shoulders; then his shoulders are squeezed, and with your hands you press together his ribs from both sides and skilfully try to equalize them in any way you conveniently can, until the bone is reduced to its proper form. Then apply over it a plaster and a pad and place over that a splint of thin willow board or brier or similar light wood, first wrapping it in cloth; then gently bind this upon the fractured bone so that it does not slip; and carry your bandage round about the back several times, tying it firmly; then inspect it constantly, and whenever it loosens tighten it. If you are compelled to loosen it on account of itching at the place, or pain or swelling, loosen it quickly and remove the plaster and correct whatever has occurred with the appropriate treatment. Then renew the plaster if you think fit, and keep it bandaged until it heals.

الفصل السابع في جبر كسر الصدر

الصدر قد ينكسر في وسطه وقليلًا ما يعرض ذلك وأما أطرافه
فهى أكثر ما تنكسر وتفتت، ومن أعراضه إذا انكسر وسطه أن يميل
إلى أسفل ويعرض له وجع شديد وعسر في النفس وسعال وربما قذف¹
5 دما ويتبين التقعير في العظم المكسور ولا يخفى للحس، وجبره أن
يستلقى العليل على ظهره وتصير بين كتفيه مخدة ثم تكبس منكباء
وتجمع الأضلاع بالأيدي من الجانبين وتلطف في تسويته على كل وجه
أمكن ذلك ووافق حتى يرجع شكل العظم على ما ينبغي، ثم احمل
عليه الضماد والمشاقة وضع من فوقه جبيرة من لوح رقيق من صفاف أو
10 خلنج ونحوه في الخفة بعد أن تلقها في خرقة، ثم تلطف في ربطها
على العظم المكسور لئلا تزول، ومرّ بالرباط على استدارة إلى الظهر
مرات وشده شداً محكماً، ثم تفقد الرباط في كل وقت، وكلما استرخى
شدته، وإن دعت الضرورة إلى حله عند أكال يعرض في الموضع
أو وجع أو ورم فبادر بحله واقلع الضماد وأصلح ما عرض من ذلك
15 بوجه علاجه ثم رد الضماد إن رأيت لذلك وجهها وألزمه الشد حتى
يبرأ،

B. بصرى 1.

CHAPTER EIGHT. On the repair of ribs when they are fractured.

You should know that fracture of the ribs occurs only at the thick parts bordering on the vertebrae, whereas the anterior extremities are only contused, because they are cartilaginous; this is easily diagnosed on examination with the fingers. They should be set by levelling out the fracture with the fingers in any manner you can so that the form is as it should be; then apply the plaster and bind the broken bone with a splint, if necessary. If it be a depressed fracture of the ribs, then the patient will have a vehement pain and a piercing sensation like that of pleurisy, since the bone is piercing the pleura; in addition he will have difficulty in breathing and will cough, and vomit much blood; the treatment of this is difficult.

In this the Ancients practised many devices. Some said that the patient should have food of such a kind as to generate wind and inflation to blow out and stretch the belly and so push out the fracture. We, however, reject this, since it will excite an effusion if one has not already arisen; and if one has arisen it will increase and confirm it. Some of them said a cupping-vessel should be applied to the place and strong suction be made; this seems more reasonable except that there is a risk of the vessel's drawing superfluities to the place on account of his weak state. Some of them said that the place should be covered with wool soaked in warm oil and that a pad should be placed in the intercostal space to fill it up so as to make the bandaging level when you wind it round. Then treat the patient with diet and medicines as for pleurisy. If the patient is in such a bad way that he

الفصل الثامن فى جبر الأضلاع اذا انكسرت

اعلم أنّ الأضلاع إنّما يقع الكسر فيها فى المواضع الغلاظ
التى تلى الظهر وأطرافها من قدام إنّما يعرض لها الرض من أجل
أنها غضروفية ومعرفة ذلك لا تخفى للحس عند التفتيش بالأصابع،
وجبرها بأن تسوى الكسر بالأصابع على الوجه المتمكن حتّى
يستوى الشكل على ما ينبغى ثم تضد وتشدّ العظم المكسور بجبيرة إن
احتاج الى ذلك، فإن كان كسر الأضلاع مائلة الى داخل فإنّه
يعرض للعليل وجع شديد ونخس كالنخس الذى يعرض لمن به
شوصة من أجل أنّ العظم ينخس الحجاب ويعرض له أيضا عسر
النفس والسعال وقذف دم كثير وهذا عسر العلاج،

وقد تحيلت الأوائل فيه بحيل كثيرة فمهم من قال ينبغى أن
تجعل أغذية العليل ما يولد النفخ والرياح لينتفخ البطن ويستمدّد
ويندفع الكسر الى خارج ونحن نكره هذا لئلا يكون توكيدا لحدوث
الورم الحارّ إن كان لم يحدث فإن كان قد حدث فإنّه يزيد فيه
ويؤكّده، وقال بعضهم توضع على الموضع محجمة ثمّ تمص بقوة وهو
أشبه بالقياس² إلا أنّه يتخوّف أن تجذب المحجمة فضولا الى الموضع
لحال ضعفه، وقال بعضهم ينبغى أن يغطى الموضع³ بصوف قد غمس
فى زيت حارّ وتصير رفاة فيما بين الأضلاع حتّى تمتلئ فيكون الرباط
مستويا اذا لفته على استدارة، ثمّ تعالج العليل بعلاج الشوصة

فى القياس من الاول، HS، من القياس، M، للقياس، A، 2. MP. التنفس 1.
cett. المواضع، M، 3. BV. فى القياس، P،

cannot bear it, the bone painfully piercing the pleura, and we are afraid for him, then we shall have to cut down upon the place and lay bare the broken rib; then we place under it the instrument to protect the membrane, which has been described, and gently cut out the bone and remove it. Then the edges of the wound should be joined, with a suture if large, and dressed with ointments until healed. If meanwhile there arise an abscess, quickly soak pads in oil of roses and apply them to the place and treat the patient with internal remedies against abscess too. Let him lie upon the side which is easier for him to sleep on, until it heals.

20 من الغذاء والدواء ، فإن "أرهم العليل أمر شديد" لا يصبر عليه
 وكان العظم ينخس الحجاب نخسا مؤذيا وتخوفنا على العليل فينبغي
 أن نشق على الموضع ونكشف عن الضلع المكسور ثم نصير تحته الآلة
 التي تحفظ الصفاق التي تقدم وصفها ونقطع العظم برفق ونخرجه ،
 ثم نجمع شفتي الجرح إن كان كبيرا بالخياطة ونعالجه بالمراهم حتى
 25 يبرأ ، فإن عرض في خلال ذلك ورم حار فبادر فبّل رفاً في دهن
 الورد وضع على الموضع وعالج العليل بما يسكن الورم من داخل
 أيضا ويستلق على الجانب الذي يخف عليه النوم حتى يبرأ ،

P. اشتد الوجع حتى 4.

CHAPTER NINE. On setting the vertebrae of the back and neck.

When a fracture occurs in the bones of the neck, which is rare, as mostly they suffer contusion, as do the spinal vertebrae—when it happens to anyone and you want to know whether it will heal or not, then look and if you see both his hands relaxed and numb and dead and he has no power to move or stretch or close them, and when you pinch them or prick them with a needle he does not notice it or feel any pain in them, you may know, as a general rule, that it will not mend, for he is doomed. But if he moves them both and feels in them the pinching and pricking, you may know that the spinal medulla is still intact and that under treatment the patient will recover.

If anything of this nature happens to the vertebrae of the back and you wish to know if he will recover or not, then pay attention to his feet. If you see them relaxed and in the situation we described in the case of the hands, and when he lies on his back he passes flatus and faeces involuntarily, and lying prone he passes water involuntarily and lying on his back he cannot pass water if he wishes, then you may know his case is hopeless, so do not concern yourself with his treatment. But if nothing of this kind occur then the case is easier.

The way to treat this latter kind of case is to try to reduce the swelling by applying over the injured vertebra oil of roses, alone, or with roasted

الفصل التاسع في جبر خرز الظهر والعنق

أما عظام العنق اذا أصابها كسر وقتل ما يعرض لها ذلك وأكثر ما يعرض لها الرض وكذلك فقارات الظهر أيضا فإذا عرض ذلك لأحد وأردت أن تعرف هل "يبرا" او ليس يبرا¹ فانظر فإن رأيت يديه قد استرختا وخدرتا وماتتا ولم يقدر على حركتهما ولا بسطهما ولا قبضهما وإذا قرصتهما او نخستهما بإبرة لم يحس بذلك ولم يجد فيهما ألما فاعلم أنه لا يبرا في أكثر الأحوال فهو هالك، وإن كان يحركهما ويحس فيهما بالقرص والنخس فاعلم أن نخاع العظم قد سلم وأن العليل يبرا بالعلاج،

10 فإن أصاب خرز الظهر مثل ذلك وأردت أن تعلم هل يبرا أيضا أم لا فانظر الى رجله فإن رأيت أنها قد استرختا وحدث فيهما ما حدث في اليدين ثم اذا اضطجع على ظهره خرج الريح والبراز من غير إرادة² وإذا استلقى على بطنه خرج البول من غير إرادة³ وإذا استلقى على ظهره وأراد البول لم يستطع على ذلك³ فاعلم 15 أنه هالك فلا تعنى بعلاجه فإن لم يعرض له شيء من ذلك كان الأمر أخف،

وعلاج ما حدث من ذلك أن تروم تسكين الورم الحار بأن تضع على الفقارة المرضوضة دهن الورد وحده او مع فصوص البيض مشوية

يموت ام عيش في كسر العنق ان M, يبرا او لا يبرا, V, يبرا او لا 1.
H. الصلب يبرا او ليس يبرا 2. om. H. 3. om. M.

yolks of egg; apply three times a day until the swelling has gone down. Then apply to the place one of the strengthening and absorbent plasters and bind it on; bid him keep quiet and still and sleep only in the attitude in which he has no pain, until he is well.

If the injury is accompanied by fragmentation or a separation of part of the bone, you must cut down on it and remove the bone; then bring together the edges of the opening, by suture if it be wide; then treat with granulating ointments until it heals.

If the last bone of the coccyx,¹ which is the sacrum of the tail, breaks, introduce the thumb of your left hand into his anus and reset the bone with the other hand in whatever way is possible and affords the best setting; then apply over it a plaster, and a splint if necessary, and bind it up. And if you perceive a fragment in the fracture, cut down upon it, remove it, and dress the wound as before said, until it heals.

¹ M reads 'one of the two bones of the coccyx'.

تضع عليه ذلك ثلاث مرّات في النهار حتّى اذا سكن الورم الحارّ
20 فاحمل على الموضع أحد الضمادات المقوية المنشفة وشدّ عليه بالرباط
وأمره بالسكون والقرار ولا ينام إلّا على الجهة التي لا يجد معها
وجعا حتّى يبرأ،

فإن كان قد حدث عند الرضّ في العظم شظيّة أو شيء قد
تبرأ منه فينبغي أن تشقّ عليه الجلد وتنتزع ذلك العظم ثمّ تجمع
25 شفتي الجرح إن كان كبيراً بالخياطة ثمّ تعالج بالمراهم الملحمة حتّى
يبرأ،

فإن انكسر "آخر عظم" العصعص وهو عجز الذنب فينبغي أن تدخل
الإبهام من اليد اليسرى في المقعدة وتسوّى العظم المكسور باليد
الأخرى على حسب ما تمكن وتتأتّى التسوية ثمّ تحمل عليه الضماد
30 والجبيرة إن احتجت إلى ذلك ثمّ تشده، فإن أحسست بشظيّة مكسورة
فيه فشقّ عليها وانتزعها وعالج الجرح بعلاج ما تقدّم حتّى يبرأ،

4. H. آخر عظام، M. أحد عظمي.

CHAPTER TEN. On setting a fractured hip.

It is rare indeed that hip-bones are fractured, and if they are fractured the fracture consists of a comminution of the extremities of them and a longitudinal splitting and a bending inward; and the patient feels a pain and a piercing at the site, and the leg on the fractured side is benumbed. To set it, you pass your hand over it and ascertain what the shape of the fracture is. If it is a fracture of the extremity only, set that fracture in whatever manner is convenient for you until it answers to its proper shape. But if it be a longitudinal fracture or it has bent inwards, have the patient lie on his stomach so as to make it convenient for setting the fracture; and when you have set it apply over it a plaster and over that a splint of wood or leather, and bandage it in such wise that you have no fear that the fracture may extend or the splint slip. Level out the cavity of the lumbar region with some filling so that it may take the bandage evenly, and bid the patient sleep on his back or on his sound side. If there occur an effusion, then refrain from bandaging or setting it until the effusion subsides; and apply to it something to allay it as before said; then return to setting it and bandaging it as it should be. If there be any splinters in the bone or anything crumbles away from the extremities, it must not be pulled out or touched, but set externally as we have said, and the bandaging should be left until it heals.

الفصل العاشر في جبر كسر الورك

قل ما تنكسر عظام الأوراك فإن انكسرت فإنما يكون كسرهما أن
تفتت في أطرافها وتنشق في الطول وتميل إلى داخل ويعرض
للعليل وجع في الموضع ونخس وتخدر الساق التي¹ الكسر² من جهتها
5 وجبره أن تمرّ بيدك عليه حتى تقف على الكسر كيف هو شكله فإن كان
الكسر في أطرافه فقط فسوّ ذلك الكسر على حسب ما يتهيأ لك من
التسوية حتى يشبه شكله الطبيعي، فإن كان الكسر في الطول أو
كان قد مال إلى داخل فأضع العليل على بطنه حتى يتهيأ لك
جبر ذلك الكسر، فإذا سويته حملت عليه الضماد ثم تضع عليه جبيرة
10 من خشب أو من جلد وشده شداً لا تخاف عليه انتقال الكسر ولا
زوال الجبيرة وتسوي التعجير من الخواصر بما يملأ حتى يأخذ
الشدة على استواء وتأمر العليل أن ينام على ظهره أو على جنبه
الصحيح، فإن عرض له ورم حار فكف عن مده وجبره حتى يسكن
الورم الحار وأحمل عليه ما يسكه على ما تقدم ثم ارجع إلى جبره
15 وشده كما ينبغي، فإن عرض في العظم شظايا أو تفتت من أطرافه
شيء فلا ينبغي أن ينزع ولا يمس بل يسوى من خارج كما قلنا
ويترك شده حتى يبرأ،

1. الذي codd. 2. V, انكسر cett.

CHAPTER ELEVEN. On setting a fracture of the humerus.

The humerus is what lies between the elbow and the head of the scapula. If it is fractured it may be set in one of two ways. One is to take a smooth bow-shaped piece of wood of medium thickness, like this (fig. 193).

You tie two bands at the two ends and then it is hung from above. The patient is to sit on a seat; then his broken arm is folded upon the piece of wood in such a way that his axilla fits into the middle of the curve of the piece of wood. Then hang a heavy weight from the arm, or have an assistant pull it downwards; then the doctor should straighten out the fracture with both hands together until it is properly reduced.

The other way is to make the patient lie back and to suspend his hand from his neck by a band, then you instruct two assistants. One is to grasp with both hands the arm above the fracture, and the other the arm below the fracture; and each should make extension toward himself. And if you

الفصل الحادى عشر فى جبر كسر العضد

العضد هو ما بين المرفق الى رأس الكتف فإن انكسر فجبره
على أحد وجهين أحدهما أن تأخذ عودا مقوسا أملس متوسط الغلظ
على هذه الصورة:



Marsh



Fig. 193

Huntington

وتربط فى طرفيه رباطين ثم يعلق من موضع مرتفع ويجلس
العليل على كرسى ثم تلقى ذراعه المكسورة على العود حتى يصير
إبطه ملصقا فى وسط انحناء العود ثم يعلق من فوقه شئ ثقيل او
يعدّه خادم الى أسفل ثم يسوى الطبيب الكسر بيديه معا حتى يرد
الكسر على ما ينبغى،

والوجه الآخر أن يستلقى العليل على قفاه وتعلق يده من عنقه
برباط ثم تأمر خادمين أن يضبط أحدهما ما فوق الكسر بيديه والآخر
أن يضبط أسفله ويمدّ كل واحد منهما الى جهته، وإن أردت أن

wish to extend more strongly, tie a band below the fracture and another above, and let each assistant pull toward himself. If the fracture is near the extremity of the shoulder you will have to put one¹ band beneath the axilla and the other below the fracture near the elbow. Similarly, if the fracture be near the elbow you will have to put a band over the place and over the elbow itself. Then gently and without violence straighten out the fracture until it is restored to its proper shape and fits together well, and then tighten it if no abscess occur. But if an abscess occur, leave the bandaging until the seventh day and apply raw wool soaked in vinegar and oil of roses until the abscess subsides; then bind it up.

The method of binding it is to apply a plaster to the fracture; then wind round the plaster a bandage of new material; then bind the forearm to the humerus, placing his hand open on his shoulder. Then apply pads and bandages to the arm and forearm so that the forearm serves instead of splints, if there is no contra-indication and you see no pathological change in the broken bone. But should you fear any such change then use splints. The way to use these is to place over the fracture itself a splint that is broader and stronger than the rest; and leave a space of a finger's breadth between splints; the splint should be of a length to suit the fracture with the addition of three fingers' breadth all round. Then bandage over the splints in the manner mentioned at the beginning of the chapter. That is, you should bandage more tightly over the fracture itself and more lightly as you get away from the fracture. If you decide to put on splints and bandage, as we have said, at the time you set the limb, do so. But if you

¹ P jumps straight from 'have to put' to 'a band over the place', two lines below. All the other MSS. read not 'one band' but 'the middle of the band'.

يكون المد أقوى فشده تحت الكسر برياط وفوقه برياط ويمدهما كل واحد من الخادمين الى جهتهما ، فإن كان الكسر قريبا من طرف المنكب فينبغي أن تصير¹⁵ [وسط] الرباط تحت الإبط والآخر تحت الكسر نحو المرفق ، وكذلك إن كان الكسر قريبا من المرفق فينبغي أن تصير²⁰ الرباط على ذلك الموضع وعلى المرفق نفسه ، ثم تسوى الكسر برفق من غير عنف حتى اذا استوى الكسر على ما ينبغي وائتلف ائتلافا حسنا ثم تشده إن لم يعرض ورم حار فإن عرض ورم حار فترك شده الى اليوم السابع وضع عليه صوفة مودحة مشربة بالخل ودهن الورد حتى اذا سكن الورم فحينئذ فشده ،

وصفة شده أن تحمل الضماد على الكسر ثم تحمل لفافة من خرقة جديدة على الضماد ثم تجمع الذراع على العضد نفسه وتضع يده مفتوحة على منكبه ، وتحمل الخرق والشد على العضد والذراع²⁵ ليكون الذراع يقوم مقام الجبائر إن لم يمنعك من ذلك مانع ولم يتغير عليك من العظم المكسور شيء ، فإن خفت أن يتغير عليك من ذلك شيء فاستعمل الجبائر وهو أن تضع على الكسر نفسه جبيرة تكون أعرض وأقوى من سائر الجبائر وليجعل بين كل جبيرة عرض أصبع وليكن طول الجبائر على حسب الكسر بزيادة ثلاث أصابع من كل جهة³⁰ ثم تشد على الجبائر الشد الذي ذكرته في أول الباب وهو أن يكون شدك على موضع الكسر أشد وكلما بعد الكسر كان الشد أقل ، فإن رأيت وضع الجبائر والشد كما قلنا في حين جبرك للعضو من ساعتك

1. om. P.

fear an abscess, leave the splinting and bandaging until the seventh day as we have said. Then examine the bandaging every third day lest there be itching or swelling at the place; or nourishment be prevented from reaching the limb on account of excessively tight bandaging; treat all these in the proper manner according to our prescriptions. But if you are confident that nothing of this sort is happening then do not loosen the bandaging until after many days.

The patient should be made to sleep on his back with his hand on his stomach, and under the humerus there should be placed a cushion evenly filled with wool. And examine it at all times of the day and night lest the shape of the broken limb suffer any deformity or the binding loosen; do your utmost to put any such thing right. You should also direct the patient's diet along the line that we have given earlier; namely, at first the food should be light until the bone has begun to knit; then you should order heavier food. Now it is the nature of the humerus and of the leg to knit in forty days; then they should be loosened and the patient should go to the bath and be treated with suitable ointments. If the fracture be ugly and contused, do not unfasten it for fifty days or even two months.

فافعل ، وإن خشيت الورم الحار فاترك الشد والجائر الى اليوم
السابع كما قلنا ثم تفقد الرباط في كل ثلاثة أيام لئلا يحدث في
35 الموضع حكة او نفخ او يمتنع الغذاء من الوصول الى العضو لحال
إفراط الشد فتصلح ذلك كله على ما ذكرنا ، فإن كنت على ثقة أن
لا يحدث شيء من ذلك فلا تحل الرباط إلا بعد أيام كثيرة ،
ويكون اضطجاع العليل على ظهره ويده على معدته وتوضع
تحت العضد مرفقة مملوءة من الصوف معتدلة ، وتفقد في كل وقت من
40 ليل او نهار لئلا يتنقض شكل العضو المكسور او يسترخى الرباط
فأصلح ذلك كله بجهدك ، واجعل غذاء العليل على الرتبة التي
قدمنا بأن يكون الغذاء لطيفا أولا حتى اذا هم العظم أن يشتد
فينبغي أن تغلظ غذاءه ، فإن من عادة العضد والساق أن تشتد
في أربعين يوما فحينئذ ينبغي أن تحل ويستعمل الحمام ويعالج
45 بالمراهم التي تصلح لذلك ، فإن كان الكسر فاحشا مترضا فلا تحل
عنه الرباط الى خمسين يوما او الى شهرين ،

CHAPTER TWELVE. On setting a fracture of the forearm.

The forearm consists of two bones and is sometimes called 'the two fire-sticks'.¹ One of these bones is small and is in line with the thumb, the other is large; this is the one placed lower, under the smaller one. The larger alone may be broken, or the smaller alone, or both broken together. When the small upper bone (radius) is broken it is easy to set and its mending is rapid. When the lower bone (ulna) breaks it is bad and its mending is difficult. Worst of all is when both bones break together.

If the broken bone is the radius, the doctor when setting it must use light traction, gently, until he has it straight. If it is the ulna that breaks, he must employ stronger traction on it. If both bones break he must employ very strong traction. During setting and extension the hand must be disposed on a cushion, spread out with the thumb uppermost, higher than all the fingers, and the little finger downmost, while the patient sits cross-legged upon the floor. The cushion should be on a level with him so that he does not suffer discomfort. Then let an attendant extend the arm from below, either by hand or by means of a band, while another attendant extends it from above similarly. Then the doctor may straighten the bone so as to restore it to the best possible shape. If there be any splinters in the fracture he must do his utmost to restore each splinter to its place. If a detached splinter appears there and is piercing the skin and you have no hope of restoring it, cut down upon it and remove it in the manner we have

¹ *al-xandān*, whence the medieval Latin *focile*.

الفصل الثاني عشر في جبر كسر الذراع

الذراع مركب من عظمين ويسمى¹ الزندين أحدهما صغير وهو الذي يلي الإبهام والآخر كبير وهو الموضوع تحت الصغير من أسفل فربما انكسر الزند الأعظم وحده أو الصغير وحده وربما انكسرا معا، فمتى⁵ انكسر الزند الصغير الأعلى فإن جبره يسهل وبرؤه يكون أسرع ومتى انكسر الزند الأسفل كان كسره رديئا وبرؤه عسرا وأرداها إذا انكسرت العظامان معا،

فإن كان العظم الذي انكسر الزند الصغير الأعلى فينبغي للطبيب عند جبره أن يجعل مده يسيرا برفق حتى يسويه فإن كان الزند الكبير هو المكسور فينبغي أن يجعل مده أشد وإن كان الزندان¹⁰ جميعا هما المكسورين فينبغي أن يجعل المدة أقوى جدًّا، وينبغي أن يوضع³ شكل اليد عند جبره ومده ممدودا على وسادة⁴ ويكون إبهام اليد إلى فوق أرفع من جميع الأصابع وتكون الخنصر أسفل من سائر الأصابع والعليل قاعد مترعا على نفسه ولتكن الوسادة بإزائه في¹⁵ الارتفاع لئلا يتكلف العليل مشقة ثم يمد خادم الذراع من أسفل إما بيده وإما برباط وخادم آخر يمد من فوق كذلك ثم يسوى الطبيب العظم حتى يرده على أفضل شكل يمكنه، فإن كان في كسر العظم شظايا فتروم رد كل شظية في موضعها جهدا فإن ظهرت فيه شظية متبرئة وكانت تنخس الجلد ولا طمع لك في جبرها فشق عليها وانتزعها

1. B, يسميا. 2. H, الشد cett. 3. B, تجعل. 4. om. AHP.

mentioned earlier. If the fracture is accompanied by a wound, we have devoted a separate section to this, so take the treatment of it from there.

If, when you begin to set the bone, an effusion occurs, smear a cloth with the wax made from oil of roses and white wax, of medium thickness, and bind the dressing on gently. When the effusion subsides, remove the wax and apply the plaster prepared from mill-dust and egg-white, then apply splints; the splint that goes on the actual fracture should be a little wider and stronger than the rest.

You should know that the number of splints for an arm is, as a rule, six, whether the fracture be of one bone or of both together. Then bandage more tightly and strongly over the site of the fracture, and, as you wrap the bandage above and below the fracture, bind little by little more loosely according to the instruction given at the beginning of the book. The dressings wound round the fracture should be gentle and soft, not very hard, while the cord for binding is best made of linen of medium thickness as we have prescribed.

Some days later, examine the limb and the bandaging and if anything has happened that should be put right, such as pruritus in the limb, the limb should be bathed in warm water until the pruritus has subsided. Let the limb be unbandaged for one night so that he may rest, then put the bandage on again.

If the bandaging has become loose and the bone has shifted or anything

20 على الصفة التي ذكرنا فيما تقدم، فإن كان الكسر مع جرح فقد
أفردت له بابا فتأخذ علاج ذلك من هناك،

فإن عرض في أول جبرك ورم حار فالطح خرقة بالقيروطي المعمول
بدهن الورد والشمع الأبيض وليكن متوسطا بين الشخن والرقّة وشدّ
الخرق عليه شدا لطيفا حتى اذا سكن الورم فانزع القيروطي وضع
25 الضماد المهيأ من غبار الرحو مع بياض البيض ثم احمل الجبائر ولتكن
الجبيرة التي توضع على الكسر نفسه أعرض قليلا وأقوى،

واعلم أن عدد جبائر الذراع ست في أكثر الأحوال كان الكسر
في الزند الواحد او في الزندين معا، ثم اجعل شدك على موضع
الكسر أقوى وأشدّ وكلما درت بالشد الى فوق او الى أسفل جعلت
30 الشد أرخى قليلا على ما تقدم ذكره في أول الباب، ولتكن الخرق
التي تلف على الكسر خرقا ليّنا رطبة ولا تكن صلبة جدا وليكن
الخيوط الذي يشد به من كتان خاصة متوسط بين الرقّة والغلظ كما
وصفنا،

وتفقد العضو والرباط بعد أيام فإن حدث شيء يجب إصلاحه
35 مثل حكة تعرض في العضو فينبغي أن ينطل العضو بالما الدفسي
حتى تسكن تلك الحكة ويترك العضو غير مشدود ليلة حتى يستريح ثم
يعاود الشد،

فإن كان الشد قد استرخى والعظم قد زال او نحو ذلك فأصلح

5. <ان> M, <فان> P. 6. V, cett. زد ت

of that sort, correct it all diligently. Look also to see if nourishment is being prevented from reaching the part on account of over-bandaging, in which case you will have to loosen it a little and leave it for a few days until nourishment flows to it; then bind it up. But if none of those things that we have mentioned happens to the patient, it should not be loosened until after about twenty days. Then the patient's hand is to be suspended from his neck, the arm being level, and he should guard carefully against agitated movements, and should sleep on his back.

You should know that this fracture of the arm mends in thirty or thirty-two days, and sometimes in twenty-eight, depending on the individual's constitution and the condition of his strength.

ذلك كله جهدك، وانظر أيضا فإن كان الغذاء يمتنع أن يصل الى
40 العضو لإفراط الشد فينبغي أن ترخيه قليلا وتركه أياما حتى يجرى
اليه الغذاء ثم تشده، فإن لم يعرض للعليل شيء مما ذكرنا فلا
ينبغي أن يحلّ إلا بعد عشرين يوما أو نحوها، ثم علق يد العليل
الى عنقه وليكن ذراعه معتدلا ويتحفظ جهده من الحركات المضطربة
ويجعل نومه على ظهره،

45 واعلم أنه ينجبر هذا الكسر من الذراع في ثلاثين يوما أو في
اثنين وثلاثين وربما انجبر في ثمانية وعشرين يوما كل ذلك على حسب
حالات الأمزجة وحالات القوة،

CHAPTER THIRTEEN. On the repair of fractures of the palm and fingers.

Fractures of the metacarpus and of the small bones of the fingers very rarely occur; the only frequent occurrence is contusion. When a fracture or crushing of the palm of the hand occurs the patient should sit cross-legged with a chair of the right height in front of him, on which he should put his outstretched hand. Then an assistant is to extend the broken bones while the doctor straightens them so as to achieve a proper union. Then a plaster and a dressing should be applied, if an effusion do not occur; then a splint over that, measured to the site and wrapped in a soft cloth. If the fracture be lower down, near the inner part of the palm of the hand, make a ball of cloth, bid the patient grip on it with the fractured palm of his hand, and then bind it up with a long bandage. The splint should be of leather that is somewhat soft, so as to fit into all the folds of the palm; and bandage it on suitably. But if the fracture be on the outside you will have to put one splint above and another beneath the palm of the hand, to keep the hand opened and straight; then put on the bandage, carrying it round the hand and in and out between the fingers.

The fracture may occur to one of the small bones of the fingers. If it be the thumb, then set it in the proper way and bind it down to the palm of the hand; if you like you can apply a small straight splint to it to keep the fracture straight so that it does not shift. If the break be in any of the other fingers, such as the middle or index or little finger or the ring finger,

الفصل الثالث عشر في جبر كسر كُفِّ اليد والأصابع

إنَّ مشط الكُفِّ وسلاحيات الأصابع قل ما يعرض لها الكسر وأنما يعرض لها الرُضُّ كثيراً، فنتى عرض للكُفِّ كسر أو رُضٌ فينبغى أن يجلس المليل متربعا وأمامه كرسى على استواء ثم يضع يده عليه ممدودة ثم يمدّ خادِم المِعْظَام المكسورة ويسويها الطبيب حتى اذا

اعتلفت اعتلاقا حسنا فحينئذ ينبغى أن يحمل الضماد والمشاقة إن لم يحدث ورم حارٌّ، ثمّ تحمل جبيرة من فوق على قدر الموضع وقد أدرجتها في خرقه لينة، فإن كان الكسر الى أسفل نحو باطن الكُفِّ فاصنع شبه الكرة من خرقه وأمر المليل أن يقبض عليها بكفه المكسورة¹⁰ ثمّ تشدّ بخرقه² طويلة ولكن الجبيرة من جلد فيه لين³ ليلتطى الجلد مع⁴ انتشاء جميع⁽³⁾⁴ الكُفِّ وتشدّها على ما ينبغى، فإن كان الكسر الى خارج فينبغى أن تجعل الجبيرة من فوق وجبيرة أخرى من أسفل في الكُفِّ لتكون اليد مفتوحة قائمة ثمّ يحمل الشدّ كما تدور اليد ويشبك بين الأصابع بالرباط،

¹⁵ فإن عرض الكسر لأحد سلاحيات الأصابع. فإن كان الإبهام فليستوى على ما ينبغى ثمّ يشدّ مع الكُفِّ وإن أحببت أن تجعل له جبيرة قائمة صغيرة لتقيم الكسر ولا يتحرك فإن كان الكسر لسائر الأصابع مثل الوسطى والسبابة أو الخنصر أو البنصر فليستوى وتربط مع

1. P. ٣ ص ٢. H. <كان> 2. cett. طرف M, om. P, اطراف.
4. M, انشاجع ASV, اصابع BH. 5. <نافعل> BMV.

straighten it out and bind it to the sound finger next to it; or let them all be bound up one to another, which is better; or apply a small straight splint, as we said for the thumb. While you are setting it, and afterwards, look out for an effusion and counteract it with what is required if anything of this sort occur, according to what has been repeatedly prescribed.

الأصبع التي تليها الصحيحة أو تربط كلها على الولاء فهو أجود أو
20 تضع عليها جبيرة قائمة صغيرة كما قلنا في الإبهام وتفقد في حين
جبرك وبعده عن الورم الحارّ فقابل به بما ينبغي متى حدث شيء من
ذلك على ما تكرر وصفه،

6. P. يكون B، تقدم

CHAPTER FOURTEEN. On setting a fracture of the femur.

The femur is often broken, and this is readily discernible, for it will rotate forwards or backwards. It is set by binding a bandage above the fracture and another below, while the patient lies flat on his face. Then each assistant should make an even extension in his own direction, by the bandage. This is when the fracture is in the middle of the bone. But if the fracture is close to the root of the thigh, you should tie on a soft bandage of wool or something similar, at the root of the thigh toward the groin, so that extension may be applied above, and another bandage below the fracture. Likewise if the fracture is near the knee the bandage should be near the knee, so that extension may be made downwards. Then the doctor should straighten it out with both hands until he has reduced it to the pattern of the natural form and the bone unites neatly. Then you will have to apply the plaster and bandage if there is no effusion in the limb, but if there is an effusion leave it for a few days until the swelling has gone down, then resume your treatment.

As to the bandaging, you should wrap a firm broad sash two or three times round the fracture, leaving some over; then bind the leg up so that the heel is brought to reach the root of the buttock. Then pass a long cord in the space between the thigh and the leg, low down near the knee, and let the ends of the cord come up on either side, then bind the rest of the sash over the leg and the thigh. Then apply splints to the thigh at the very site of the fracture and put one of the splints on the leg-bone. Then pack soft material

in the space between the leg and the thigh to make the bandaging even. Then start with three or four turns of a strong bandage in the middle over the site of the fracture, and as you get away from the site of the fracture bind lighter and softer and looser. Then turn to the two ends of the cord which you previously passed between the thigh and the leg, and with the cord bind the adjacent splints above, then carry the ends downward until you end up at the great tendon of the foot and with them bind also the extremities of the splints at the other end so that the bandaging will not shift from its place. Then let the bandaging remain on as long as no pruritus or abscess or effusion or anything of that sort happens to the limb; but if any of these occur loosen it quickly and put right whatever has taken place, in the manner we have often mentioned. If there be a penetrating fragment of the bone, you must reposition it if you can; but if not then cut down upon it and remove it and treat the wound in the sort of way mentioned previously, until it heals.

This fracture of the thigh is sometimes bandaged without bringing the leg alongside with splints, in the way we spoke of for the humerus and the forearm. But setting after the former manner does not cause the patient any lameness; whereas if the femur is set alone without binding the leg to it the patient will inevitably be lame for always.

You must know that the femur knits in fifty days or a little more or less, according to the different constitutions and other circumstances.

20 احش الخلل الذى بين الفخذ والساق بالخرق اللينة ليستوى الشد ،
 ثم ابدأ بالشد القوى من الوسط على موضع الكسر ثلاث لفات او
 أربع وكلما بعدت بالرباط من موضع الكسر فليكن شدك أقل والين
 وأرخاً ، ثم اعمد الى طرفى الخيط الذى كت ادخلت بين الفخذ
 والساق فاربط⁵ به ما يليه⁶ من الجبائر التى من فوق ثم مر بطرفى
 25 الخيط الى أسفل حتى تنتهى الى عرقوب الرجل فشد بهما أيضاً
 أطراف الجبائر من الجهة الأخرى لكلاً يزول الرباط من موضعه ، ثم
 تترك الشد عليه ما دام لا يتحدث للعضو أكل ولا ورم ولا نفخ ونحو
 ذلك ، فإن حدث شئ من ذلك فبادر بحله وأصلح ما حدث من
 ذلك كله على ما ذكرنا مراراً ، فإن كان فى العظم شظية تنخس
 30 فينبغى أن تسوى ذلك إن أمكنك وإلا فشق عليها وانتزعها وعالج
 الجرح بمثل ما تقدم ذكره حتى يبرأ ،
 وقد يشد هذا الكسر من الفخذ من غير أن تضاف اليه الساق
 بالجبائر كما ذكرنا فى العضد والذراع إلا أن جبره هكذا ليس
 يعرض معه⁶ للعليل عرج وإن جبرت وحدها من غير أن تضم اليها
 35 الساق فلا بد من أن يعرج صاحبها أبداً ،
 واعلم أن الفخذ تشتد فى خمسين يوماً او تزيد قليلاً او تنقص
 قليلاً كل ذلك على حسب اختلاف الأمزجة وسائر الحالات ،

5. M, // ما يليه 5. cett. بهما ثلثه P, به M, // ما يليه 5.
 6. B, om. cett. منه 6.

CHAPTER FIFTEEN. On setting a fracture of the patella of the knee.

You should know that the patella is rarely fractured, but crushing often occurs. If a fracture does happen to it, it will be either a splitting or a shattering which may be simple or compound; and all these can be palpated. Now the way to set is for the separated parts of it to be put right with the fingers, so that they unite and join as far as straightening and gentleness and skill can serve. Then apply the plaster and put upon that a circular splint, if need be, and over that a suitable bandage. Then keep an eye on it for all the conditions described for the other fractures, such as an effusion and the like, meeting whatever arises with what is good for it, until it is healed.

الفصل الخامس عشر في كسر فلكة الركبة

إن فلكة الركبة قل ما يعرض لها الكسر وقد يعرض لها الرض كثيرا فإن عرض لها كسر فإنما يكون إما شقا وإما تفتتا في أجزائها ويكون ذلك مع جرح وغير جرح وتقف على ذلك كله بالحس، وجبرها 5 بأن تسوى ما تفرق من أجزائها بالأصابع حتى تجتمع وتأتلف على حسب ما تتمكن التسوية والرفق والإتقان، ثم تحمل الضماد وتحمل عليه جبيرة مدورة إن احتجت إلى ذلك وتشد من فوق الشد الموافق لذلك، ثم تتعاهد جميع الأحوال التي وصفنا في سائر الكسر مثل الورم الحار ونحوه بأن تقابل كل عارض بما يصلح له إلى أن يبرأ،

CHAPTER SIXTEEN. On setting a fracture of the leg.

The leg consists of two bones. One of them is thick and is called 'leg bone' (tibia). The other is slender and is called 'fire-stick' (fibula). Both of these are liable to the same kinds of fracture as occur in the two bones of the forearm, therefore the repair of them will be like that of the arm, and the operation is one and the same. If both bones are broken together, the leg will turn in all directions. If the fibula is broken there will be a forward deformity of the leg. If the tibia be broken, and that low down, it will be obvious to you. Employ levelling and extension and binding on of splints similar to that (sc. of the arm). But it will be necessary, if the fracture of the leg be a serious one with much fragmentation, for the extension to be gentler and lighter; and you must employ the utmost gentleness in setting it. The operation on the leg involves one more process than that on the arm, namely, that when you have set the splints and have finished the task, you should take two strips of pine wood such as are used for roofing upstairs rooms, being put in the gaps of the planking, or they may be palm stalks; pick out such as are somewhat thick and not too thin; they should be as long as the leg from the knee down. Then wrap each of them in a cloth folded into two longitudinally, and put one on each side of the leg; they should reach from the knee to the extremity of the foot. Then tie the two strips in three places, namely at the two ends and in the middle; this

الفصل السادس عشر في جبر كسر الساق

إنَّ للساق¹ عظمين أحدهما غليظ ويسمى بعظم² الساق والآخر رقيق ويسمى زندا ويعرض لهما من أنواع الكسر ما يتعرض لعظمى الذراع ولذلك صار جبره كجبر الذراع سواء والعمل واحد، فإن 5 انكسر العظمان جميعا انقلبت الساق الى جميع الجهات، وإن انكسر العظم الأرق انقلبت الساق الى قدام وإن انكسر العظم الأغـلـظ وحدث ذلك من أسفل فهو ممّا لا يخفى عليك، فاستعمل الممدّ والتسوية وربط الجبائر على حسب ذلك سواء إلا أنه ينبغي إن كان كسر الساق كسرا فاحشا ذا شظايا كثيرة أن³ يكون المدّ أقل وأخفّ 10 وترفق جهدك بجبره، وفي الساق من العمل شيء زائد على الذراع وهو أنك إذا سويت الجبائر وفرغت من جميع عظمك فخذ فسقيتين⁴ من عود الصنوبر التي تستعمل في تسطيح⁵ الغرف⁶ التي توضع⁷ بين شقوق⁷ الألواح أو تكون من جرائد النخل أو نحوها واختر منها ما لها غلظ قليلا ولا تكون من الرقاق وليكن طولها على طول الساق من الركبة 15 الى أسفل، ثم لف على كلّ واحدة خرقة لفتين على طولها وضع الواحدة من الساق والأخرى من الجهة الأخرى ولتكن من الركبة الى أسفل القدم، ثم تربط الفسقيتين⁸ في ثلاثة مواضع من الطرفين والوسط

1. cett. فينبغي ان، V. 2. codd. باسم. 3. BM. الساق، P. الساقين. 4. V. شعس، M. // قتين، H. فشقس، A. فسسس، P. فستقتين، B, S s. p. 5. AHP, cett. بنا. 6. A. العرب. 7. HP. من شقوق، A. 8. BV, S s. p.، M. الشقتين، cett. تحت AH. العسفن.

binding prevents the leg from bending to right or left and it will be held in a good straight position. Sometimes a 'gutter-splint' is used, made of wood according to the length of the leg; the leg is placed in this and it keeps the leg motionless. This is particularly necessary in a compound fracture. Then carefully examine the leg every day and use the utmost care to guard against effusion or swelling or other like things; and when anything of this sort happens employ the means to meet the case until it heals. The bone of the leg mends in thirty days or so.

فإن بهذا الزمام يمتنع الساق أن يميل يمينا وشمالا ويثقف تثقيفا
 حسنا ، وقد يستعمل ميزاب من خشب على طول الساق ويوضع فيه
 20 ليحفظه من الحركة وأكثر ما ينبغي أن تفعل ذلك في الكسر اذا كان
 معه جرح خاصة ، ثم تفقد الساق في كل يوم واعن به عناية بالغة
 عن الورم او النفخ او سائر ذلك فمتى حدث شيء من ذلك فقابله
 بما ينبغي الى أن يبرأ ، ¹⁰ وعظم الساق ينجر في ثلاثين يوما او
 نحوها ¹⁰

9. AH. يومين. 10. BMV, om. cett.

CHAPTER SEVENTEEN. On fracture of bones of the foot and of the toes.

The heel is never fractured; but the bones of the foot sometimes are. The toes too are rarely fractured; but mostly they get crushed. If a fracture occurs to the bones of the foot, and you see the bones riding over one another, let the patient plant his foot flat on the ground as if walking. Then stand and put the sole of your foot on the prominent bones and with your foot put pressure upon them and level them to their proper place. Then apply a bandage and some tow on top, and put under the inner part of the sole of the foot a small board with two flat heads. After you have wrapped them in material and so on, bind them tightly to the sole of the foot. When three days or four have passed, loosen the binding and you will find the bones in position; whether they have been fractured or dislocated, the operation is (the same,) as you see.

If one of the toes be broken, reposition and straighten it in the way that I described for the fingers; then apply to the broken toe a splint of a length corresponding to the toe and a little wider than it. Then under the sole of the foot put the board that I have just described, and bandage it on firmly. If the broken bones number two, three, or more, then apply over each toe a single splint measured to it, wrapped in soft material, and bind the board on the sole and let the flat portion of each of the two heads extend beyond the end of the sole of the foot, so that it may be held firmly. And you must not forget to pay attention to all those contingencies that we have men-

الفصل السابع عشر في كسر عظام الرجل والأصابع

أما الكعب فلا يعرض له كسر البتة وأما عظام الرجل فقد يعرض لها الكسر، والأصابع أيضا قل ما يعرض لها الكسر وإنما يعرض لها الرض في أكثر الأحوال، فإن عرض لعظام الرجل كسر ورأيت تلك العظام قد أشرفت بعضها على بعض فليضع العليل قدمه على الأرض منتصبه كالماشى ثم قم أنت وضع قدمك على ما ارتفع من تلك العظام ثم طأها وسوّها حتى ترجع في مواضعها، ثم احمل الضماد والمشاقة من فوق وضع تحت باطن القدم لوحا صغيرا يكون له رأسان مسطحة، ثم شدّ بها القدم شدّا محكما بعد لفك لها بالخرق وسائر ما تحتاج إليه، فإذا مرت له ثلاثة أيام أو أربعة فأطلق الرباط فإنك تجد العظام مستوية كانت مكسورة أو كانت مفكوكة فالعمل كما ترى، وأما إن انكسر بعض الأصابع فاجبرها وسوّها على حسب ما وصفت لك في جبر أصابع اليد، ثم اجعل للأصبع المكسورة جبيرة على طول الأصبع ولتكن أعرض منها قليلا، ثم اجعل تحت القدم هذا اللوح الذي وصفت لك وشده شدّا محكما، فإن كان الذي انكسر من العظام اثنين أو ثلاثة أو أكثر فاجعل على كلّ أصبع جبيرة من قدره مدرجة في خرقة لينة وشدّ اللوح في أسفل القدم وليكن متكأ¹ كلّ رأس من رأس³ اللوح خارجا عن بطن القدم ليضبط ضبطا حسنا، وينبغي لك أن لا تنسى أن تتعاهد جميع ما ذكرناه

رأس 3. AHP. على 2. cett. متكى، P. شد مكينا، V. منكى، B. منكبا 1.

codd.

tioned to you in other fractures; meet each contingency with the means proper to it.

20 لك فى سائر الكسر من الأعراض التى ذكرناها وقابل كل عارض بما
ينبغى

CHAPTER EIGHTEEN. On fracture of the female pudenda and of the pubic bone and of the male organ.

When a woman's pudenda are fractured, make her sit cross-legged, then bend her backwards little by little, being supported from behind. Then let a midwife pack the vulva with cotton wool so as to form a kind of spherical packing in the vulva. Then shake the woman and by degrees elevate the dorsal spine, for the cotton wool will emerge until it is like a sphere at the opening and the fractured bone will be reduced. Then put a pillow upon her back and when she wants to pass water gently remove the cotton wool so she may do so, then put it back in the same way in which it was put in at the first. Then she should return to her pillow as before. She should do this for about seven days, then it will be mended. If you prefer, take a sheep's bladder and bind a hollow reed to the opening of it; introduce the whole bladder into the pudenda and then blow hard into the tube so that the bladder is inflated within the passage and the fracture will then be reduced. Then pack with cotton wool and let her wait a few days as we have described, until it be healed.

Now when a man or woman has the pubic bone broken you can use for the setting and repair of it the method we gave for a fracture of the hip. The correct practice in these uncommon fractures, which very rarely happen, will be obvious, especially to one who has some experience and understands well this book of mine. For the fracture itself will in most cases indicate the correct way to repair it and bind it up, so use your intelligence.

When a man's organ is fractured, take a goose's neck and introduce the penis into it; then let it be wrapped and bandaged and left for about three days until it be healed.

الفصل الثامن عشر فى كسر فرج المرأة وعظم العانة وذكر الرجل
 متى انكسر فرج المرأة فأقعد لها متربعة ثم احنها الى جهة
 ظهرها قليلا قليلا ولتمسك من خلف ثم تحش القابلة فرجها بالقطن
 حتى يعلأ ويصير فى فرجها كالكرة ثم تهز المرأة ويرفع صلبها قليلا
 5 قليلا فإن ذلك القطن يخرج حتى يصير عند باب الفرج كالكرة ويرجع
 كسر العظم ثم تجعل رفاة على ظهرها فمتى أرادت أن تبول
 نزت القطن برفق حتى تبول وترده على النحو الذى أدخلته أولا ثم
 ترجع الى رفايتها الأولى ، تفعل ذلك سبعة أيام او نحوها فإنه
 ينجبر، وإن شئت أن تأخذ مائة شاة فتشد على فمها² أنبوبة
 10 قصبة وتدخل المائة كلها فى فرجها ثم تنتفخ فى الأنبوبة بقوة حتى
 تنتفخ المائة فى داخل الفرج فإن الكسر يرجع، ثم احشه بالقطن
 وتقيم أياما على ما وصفنا حتى يبرأ،
 وأما متى انكسر عظم العانة من الرجل او المرأة فيستعمل فى
 جبره وتسويته ما وصفنا فى عظم الورك، وليس يخفى عليك الصواب فى
 15 هذه الكسور الغربية التى قل ما تقع ولا سيما لمن كانت له بعض
 الدرية ويفهم كتابى هذا نعتا لأن الكسر نفسه يدلّك فى أكثر الأحوال
 على طريق الصواب فى جبره وشده فافهم،
 وأما ذكر الرجل اذا انكسر فخذ حلقوم إوزة فتدخل الذكر فيه
 ثم توضع عليه لفافة من خرقة ويعصب ويترك ثلاثة أيام او نحوها حتى
 20 يبرأ،

1. P, cett. 2. P, M, فان كسر العظم يرجع
 cett. ثقبها

CHAPTER NINETEEN. On the repair of fractures accompanied by wounding.

When a man has a compound fracture, especially when it is a large bone such as the femur or humerus or the like, you should at once venesect him if the conditions are suitable for venesection as set out above. If there is bleeding from the wound you must hasten to stanch it by sprinkling it with powdered vitriol if you have nothing else at hand. Then begin on the reduction of the fracture the very same day; do not put it off unless an abscess occur. But if an abscess does occur, leave the reduction until the ninth day so that the abscess may subside, and in no circumstances touch it on the third or fourth day, for you will bring evil consequences on him. If the fractured bone be overriding the skin you must try to reduce it and to straighten it out by hand, gently and with moderate extension. If reduction and straightening by hand is unsuccessful, then reduce it with this instrument; it is made of iron, seven or eight fingers' breadths long, and wide in proportion to the size of the wound; that is why the doctor should have three or four of them in the sizes he may need for treating every kind of fracture. It should be round and somewhat thick so as not to bend when pressure is put upon it at the time of operating. It should be sharp-ended with a bend at the end; the upper part should be of some thickness, but

الفصل التاسع عشر في جبر كسور العظام اذا كانت مع جرح
ينبغي لمن عرض له كسر مع جرح ولا سيما ان كان العظم
كبيرا مثل عظم الفخذ او العضد او نحوها ان تبادر فتقصده من وقته
ان ساعدتك شروط الفصد كما قد مضى، فإن كان الجرح ينزف دما
5 فينبغي ان تبادر الى قطعه بأن تدّر عليه زاجا مسحوقا إن لم
يحضرك غير ذلك ثم خذ في جبر الكسر في ذلك اليوم بعينه ولا
تؤخره إن لم يحدث ورم حار، فإن حدث ورم حار فترك جبره الى
اليوم التاسع حتى يسكن الوم الحار ولا تقره في اليوم الثالث والرابع
البتة فإنه تعرض له أعراضا رديئة، فإن كان العظم المكسور ناتيا
10 على الجلد مكشوفاً فينبغي أن تروم رده وتسويته بيديك برفق ومـدّ
يسير، وإن لم يتأت² لك رده وتسويته بيديك فرده بهذه الآلة وهي
آلة تصنع من حديد طولها قدر سبع أصابع او ثمان وعرضها على
قدر الجرح ولذلك ينبغي للطبيب أن يتخذ منها ثلاثا او أربعاً على
قدر ما يحتاج اليه من العلاج في كل نوع من الكسر ولتكن مدورة
15 يكون فيها غلظ قليلا لئلا تنثنى عند الغمز³ عليها في وقت العمل
وتكون حادة الطرف لها عطف في طرفها ويكون أعلاها الى الغلظ ومن

العمل V, العمدة 3. cett. ساتي HM, يتقف 2. cett. كسر M, om. 1.
M.

from the middle to the lower part it is a good bit thinner. This is its form (fig. 194). It is called in Greek *bayram*,¹ meaning a small lever. You must place the sharp incurved end of it over the end of the protruding bone, and push it firmly with it. When the bone is repositioned and straightened in some measure, try to straighten the ends of the fracture, one to another. If the fractured end be very thin and the instrument does not grip it firmly you will have to cut off that end so as to give purchase for the instrument. If you cannot reduce the bone at all by the means we have described, cut it off with any of the osteotomes we have mentioned that is suitable, or saw it off with one of the saws as best you may.² Then strip away any remaining roughness of the bone and fine pieces of shell. If, when you have reduced the bone, the patient feels severe and troublesome pain, you may know that the bone has not returned to its natural site. If you can restore it to its natural site, do so, for you will render the patient a signal service.

When your setting of the bone is complete, soak a dressing in dark sharp wine, especially if it be in summer, but do not put wax or anything oily upon the wound lest it cause putrefaction or corruption. Then apply splints

¹ *Bayram* is a word commonly used in classical Arabic in the sense of gimlet (*barrima* in modern Arabic) or pickaxe. It is said by the Arab lexicographers to be Persian in origin, though Steingass in his *Persian-English Dictionary* calls it Arabic.

² Here Gerard's Latin ed. shows a saw differing from those figured in Book II, chapter 88. Our MSS. have no figure of a saw here.

نصفها الى أسفل أرق جدًا وهذه صورتها :



Marsh



Huntington

Fig. 194

وتسمى باليونانية بيرم⁴ يريدون عتلة صغيرة، فينبغي أن تصير
طرفها الحاد المعقف على طرف العظم الناتي وتدفعه بها بمرة⁵ حتى
20 إذا رجع العظم واستوى بعض الاستواء⁶ فرم تسوية أطراف الكسر بعضها
على بعض، فإن كان طرفه المكسور رقيقا ولم تأخذه الآلة أخذا جيدا
فينبغي أن تقطع طرف ذلك العظم حتى تتمكن الآلة منه، فإن لم
تقدر على ردّ العظم بما وصفنا البتة فاقطعه بما شاكه من المقاطع
التي ذكرنا أو انشره بأحد المناشير كيف ما يمكن لك، ثم اجرد ما
25 بقى في العظم من الخشونة والقشور الرقاق، فإذا رددت العظم
ووجد العليل بعد ردّه وجعا شديدا مؤذيا فاعلم أن العظم لم يرجع
الى موضعه الطبيعي فإن استطعت على ردّه الى موضعه الطبيعي
فاعمل فإنك تنفع العليل منفعة عظيمة،

فإذا كمل جبرك للعظم فاغس خرقه في شراب قابض أسود
30 وخاصة إن كنت في الصيف ولا تضع على الجرح قيروطي ولا شيئا فيه
دهن لئلا يحدث فيه عفن وفساد، ثم استعمل الجبائر في حين

4. cett. مره B, مرة بعد مرة, M. om. 5. B. سوم 4.

the moment you have finished setting the bone; and leave the wound open, that is, by making with scissors an opening in the coverings the size of the wound. And take the utmost care not to bandage up a wound with a fracture; for many ignorant doctors have done that, thereby causing their patients either death or ulceration or a defluxion; so make your bandage soft and loose, as opposed to that of other fractures.

If the wound be severe or of great size and you fear for it some one of the grave accompaniments such as we have described, and the patient feels a disturbing pain at the place, then you should not put on splints; but instead of splints make wrappings of a stiff material and bind them on. If, after one or two days have passed, you see that the wound is beginning to suppurate, remove the dressing with wine that you had put on it, and then apply the pads and ointments with which it is our custom to heal wounds, such as Tetrapharmacon ointment and the like. Every evening and morning you will have to loosen the bandaging and carefully examine the wound until it knits and is healed. You must also place the limb in such a position as to let the pus flow down easily.

If, after many days, the wound is unhealed and it goes on suppurating, you may know that there are some little fragments of bone there; so you will have to examine the wound with a probe; and those fragments that are loose take and extract; and those that are not loose but nevertheless pierce the limb and cause pain, attempt to cut them out and extract them by whatever means you can. If a defluxion or ulceration or other kind of corruption or putrefaction happen to the wound, you must meet all these occurrences with the proper remedy described before in its place. One thing that is necessary is that you should comply with my words and keep them in mind:

فراغك من جبر العظم واترك الجرح مكشوفاً بأن تقرض بالمقصّ ففى
اللغائف ثقباً على قدر الجرح واحذر كلّ الحذر أن تشدّ الجرح مع
الكسر فكثيراً ما صنع ذلك جهال الأطباء فأحدثوا على مرضاهم إمّا
35 الموت وإمّا أكلة أو زكاماً وليكن شدك لنا مرخياً مخالفاً لشدّ سائر
الكسر،

فإن كان الجرح رديئاً أو كان جرحاً كبيراً وخشيت عليه بعض
الأعراض الرديئة التى وصفنا وكان يجد وجعاً فى الموضع مقلقاً فلا
ينبغى أن تضع عليه الجبائر واصنع له لغائف من خرق صلبة فى موضع
40 الجبائر وشدّه بها ، فإذا كان بعد يوم أو يومين ورأيت الجرح قد
بدأ يتولّد فيه القيح فانزع عنه الخرقة التى وضعت عليه بالشراب ثمّ
استعمل القتل والمراهم التى من عادتنا أن نداوى بها الجراحات مثل
المرهم الرباعى ونحوه ، وينبغى لك أن تحلّ الرباط وتتفقد الجرح فى
كلّ يوم مساءً وصباحاً حتّى يندمل ويبرأ ، وينبغى أن تنصب العضو
45 نصبة ليسيل منه القيح الى أسفل بسهولة ،

فإن مضى للجرح أيام كثيرة ولم يلتحم ولا انقطع القيح منه فاعلم
أن هناك شظايا من العظم صغارا فينبغى أن تفتش الجرح بالمسبار
فما كان من تلك الشظايا متبرئة فانتزعها وأخرجها وما كان منها غير
متبرئة وكانت تنخس العضو وتحدث الوجع فرم فى قطعها وانتزعها بكلّ
50 وجه يمكنك ذلك ، فإن عرض للجرح زكام أو أكلة أو نوع آخر من
الفساد والعفونة فينبغى أن تقابل كلّ عرض منها بما شاكه من
العلاج الذى تقدّم وصفه فى بابه ، ومّا ينبغى أن تقف عند قولى

when a large bone is broken and protrudes from the limb, such as the femur, the humerus, and the other bones of the long limbs, do not meddle with pulling or extracting it, for this often causes death; but leave it to suppurate. It may come away of itself in twenty or thirty days. Then dress the wound if you find occasion; if not, let be.

وتحضره ذهناك اذا انكسر عظم كبير ونا على العضو مثل عظم الفخذ
والعضد ونحوهما من الأعضاء الكبار فلا تتعرض لجذبه ولا إخراجـه
55 فـكثيرا ما يعرض من ذلك الموت بل اتركه حتى يتعفن فرمـا سقط من
ذاته بعد عشرين يوما او ثلاثين فحينئذ تعالج الجرح إن رأيت فيه
مكانا للعلاج وإلا فاتركه،

CHAPTER TWENTY. On the treatment of the callus that remains from a fracture.

This callus often occurs after the healing of a fracture, especially one near a joint, and thereby the shape of the limb is spoilt; and sometimes there is limitation of the natural function of the limb. Examine it, and if the callus be soft, apply astringent remedies to it, such as aloes, olibanum, myrrh, balsam of sarcocol, acacia, and the like. Take some or all of these; beat them up with a dry wine or egg-white or vinegar, apply to the callus on some tow and bind up firmly. Leave the bandaging on for many days; then undo it and repeat until the callus is removed, God willing. Or bind on it a firm sheet of lead; for lead has the property of taking away lumps from limbs. But if the callus is stony hard and its removal is urgent, incise the place and cut away the superfluous prominence, or pare it away with a scraper until it is gone; and dress the wound until it heals.

الفصل العشرون في علاج التعقّد الذي يعرض في إثر بعض الكسر
كثيرا ما يعرض هذا التعقّد في إثر برّ الكسر ولا سيما ما
قرب من المفاصل فيقبح منه شكل العضو وربما منع العضو عن فعله
الطبيعي، نظرت فإن كان التعقّد طرّيا فاستعمل فيه الأدوية التي
5 تقبض مثل الصبر واللبن والمرّ والعنزروت¹ والأقاقيا ونحوها بأن تأخذ
من هذه بعضها أو كلّها وتعجنها بشراب قابض أو ببياض البيض أو
بالخلّ وتحملها على التعقّد في مشاققة² وتشدّها عليها شدا جيّدا
وتترك الشدّ لا تحلّه أيّاما كثيرة ثمّ تحلّه وتعاود غيره حتّى يذهب
التعقّد إن شاء الله، أو تشدّ عليه صفيحة من رصاص محكمة فإن
10 للرصاص خاصيّة تذهب بكلّ ما³ ينتا في⁴ الأعضاء، فإن كان التعقّد
قد تحجّر واشتدّ وحفزت⁴ الضرورة الى نزعه فشقّ عليه من أعلاه واقطع
الفضلة الناتية أو اجردها ببعض المجارد حتّى يذهب وعالج الجرح
حتّى يبرأ،

يبقى من B, ينتو من A, يبقى من 3. P. <كتان> 2. P. والانزروت 1.
cett. و V. 5. M. ودعت H, وحضرت 4. HP. الغلظ في

CHAPTER TWENTY-ONE. On the treatment of a fracture when, after repair, the limb remains unnaturally thin.

When a fractured bone has been repaired but the limb remains thin and weak, this may be due to many causes: the bandaging being too often loosened and not properly tightened; or excessive binding-up so that nourishment cannot flow to the limb; or excessive fomenting; or excessive and premature movement; or the thinness and weakness of the patient's blood. The treatment of this consists in the nourishing and restoring of his body so there be plenty of blood; and the use of the bath; and cheering the patient and making him happy, and so on. Then apply pitch to the limb so that it may draw much nourishment to itself, or continue the massage to the limb with tepid water, so that nourishment flows in the limb and it returns to its normal shape.

الفصل الحادى والعشرون فى علاج الكسر اذا انجبر وقى العضو
بعد ذلك رقيقا على غير "طبعه الأول"

اذا انجبر كسر العظام وقى العضو بعد ذلك رقيقا ضعيفا فإنما
يكون ذلك لأسباب كثيرة أحدها إمّا لكثرة حلّ الرباطات وربطها على
5 غير ما ينبغى وإمّا لإفراط شدّ الرباطات حتّى امتنع الغذاء أن يسرى
الى العضو وإمّا لكثرة التنطيل المفرط وإمّا لحركات مفرطة فى غير
وقتها وإمّا لقلّة الدم فى جسد² العليل وضعفه، وعلاج ذلك تغذية
العليل وتخصيب بدنه حتّى يكثر الدم فيه واستعمال الحمام وإدخال
السرور عليه والفرج ونحو ذلك، ثمّ تحمل الزيت³ على العضو ليجذب
10 الزيت⁴ عليه غذاء كثيرا أو يدام تنطيله بالماء الفاتر حتّى يجرى الغذاء
فيه⁵ ويعود الى شكله الطبيعى،

1. BV, cett. طبيعته الاولى. 2. AH. الجسد. 3, 4. BP. الزيت.

5. MP, و cett. 6. BP, om. cett.

CHAPTER TWENTY-TWO. On the treatment of fractured bones when they mend crooked and are inhibited from their proper functioning.

When a limb that has been set has some distortion after healing, or the bone that was broken has some prominence or callosity, so that the limb is deformed, but there is nevertheless no limitation of its natural movement, then you should not listen to those who think that the bone should be broken again. In our parts there have been many ignorant doctors and bone-setters who have done this. The operation is most blameworthy and leads to great dangers, death itself not being the worst possibility. But if the distortion and callosity be recent you should massage it with an infusion of the herbs that have an emollient quality, such as leaves and roots of the marsh mallow, and melilot and the like: and apply one of the emollient plasters such as carefully prepared diachylon. Or take mucilage of the root of the marsh mallow and beat it up with chicken fat and oil of sesame, and let a cataplasm of these be applied. Or take a fat fig and beat it up with pigeon's dung; and the like remedies that are termed 'inhibitors of scarring'. Sometimes also the callosity is resolved by long-continued gentle friction with the hands; and constant movement in every direction should also be applied. But if the deformity be long-standing and fixed and hardened and you are compelled to treat it operatively, you will have to cut down on it from above, and free the junction of the bone, and with fine chisels cut away the redundant callus or bone; be gentle in this, with diligence and care. Then treat the wound with the means previously described until it heals.

الفصل الثاني والعشرون في علاج العظام المكسورة اذا انجبرت معوجة

ومنعت فعلها على ما ينبغي

فمتى عرض لمضو قد جبر بعد برئه اعوجاج او اُنتو للمعظم المكسور او تعقد وقبحت لذلك صورة المضو إلا أن المضو لم يمنع⁵ عن فعله الطبيعي فليس ينبغي أن تقبل قول من يزعم أن يكسر المضو من رأس² وقد كان كثير من جهال الأطباء والمجبرين يفعلون ذلك في بلدنا وهذا الفعل مذموم جدًا يؤدي الى غر عظيم أيسره المعطبة، لكن إن كان الموج والتعقد طريًا فينبغي أن ينطل بالما الذي قد طبخ فيه الحشائش المرخية مثل ورق الخطي وأصله والكيل¹⁰ الملك ونحو ذلك ويضمد بالأضمة المرخية كالدباخيلون المحكم الصنعة او يؤخذ لعاب أصل الخطي ويضرب مع شحم الدجاج ودهن الشيع ويضمد به او يؤخذ التين الدسم ويدق مع زيل الحام ونحوها من الأروية التي تسمى ناقضة الاندمال، وقد يتحلل التعقد بالدلك الدائم الرقيق الذي يكون بالأيدى وتستعمل حركة المضو الى كل¹⁵ جهة في الأوقات كلها، فإن كان الاعوجاج قد قدم واشتد وتحجر ودعت الضرورة الى علاجه بالحديد فينبغي أن تشق أعلاه وتطلق اتصال المعظم وتقطع ما فضل من التعقد او المعظم بقاطع لطاف وتستعمل الرفق في ذلك بجهد ونناية، ثم تعالج الجرح بما تقدم ذكره حتى يبرأ،

1. M, cett. 2. BP, cett. الرأس

CHAPTER TWENTY-THREE. Discourse on dislocations.

A dislocation is a displacement of any of the joints from its place, whereby the movement of the joint is hindered, the member is deformed, and the patient is caused violent pain and hurt. When anyone sustains a dislocation he should hasten to have it reduced, not delaying it at all. For if it is delayed the place will swell up and the reduction will be thereby made difficult. So it should not be delayed, nor moved or extended during the time it is swollen, for that often leads to spasm and excruciating pain. Instead, when this occurs, you must hasten to venesect the patient, and then let be until the swelling has subsided a little. Then massage the member with hot water and oil and let it be gently reduced. And treat every member with the things that will be mentioned in their place.

I have disposed the chapters on dislocations in the same order as the foregoing ones on fractures, that is, from the upper part of the body to the lower part.

الفصل الثالث والعشرون في القول في الفك

الفك هو خرج مفصل من المفاصل عن موضعه فيعوق عن الحركة ويقبح شكل العضو ويحدث على العليل أوجاعا وآلاما شديدة، فمتى عرض لأحد فك فينبغي أن يبادر من حينه الى رده لا يؤخره البتة، فإنه إن أخر تورم الموضع وربما يعسر معه رد الفك، فلذلك لا ينبغي أن "يؤخر ولا" يحرك ولا يمد في حين تورمه لأنه كثيرا ما يحدث على العليل تشنج وأوجاع مؤذية ولكن اذا عرض ذلك فينبغي أن يبادر الى فصد العليل ثم يترك حتى يسكن الورم قليلا ثم ينطل العضو بالماء الحار والدهن ثم يرد برفق ويعالج كل عضو بما يأتي ذكره في موضعه،¹⁰

وقد رتب فصول الفك أيضا على حسب ما تقدم في الكسر من أعلى البدن الى أسفله،

1. BP, om. cett.

CHAPTER TWENTY-FOUR. On the treatment of a dislocation of the lower jaw.

It is rare indeed for the jawbones to be dislocated. Their dislocation may be in one of two ways: either they may shift slightly from their place and be a little relaxed; or they may be completely and utterly dislocated so as to be relaxed down toward the breast so that the patient's saliva runs out and he cannot control it; nor is he able to close his mouth, and he stutters in speaking. If it be only a slight displacement it will go back in most cases spontaneously without much trouble. But if the dislocation be complete and total it is necessary to set about the reduction of it at once without any delay. This is done thus: an assistant holds the patient's head and the doctor introduces into his mouth the thumb of one hand at the root of the jaw, if it be a dislocation on one side, or both thumbs if it be a bilateral dislocation, with the rest of the fingers outside to keep it straight. Then let him bid the patient relax his jaws and allow them to move in any direction; while the doctor sets the dislocation, thrusting the jaw until it return to its proper place. If the reduction be difficult, especially if it be a bilateral dislocation, administer a fomentation with hot water and oil, so that the reduction of both sides may be facilitated. And on no account delay the reduction, as we have said. When the reduction and straightening have been done and the patient's mouth closes and is not relaxed, then apply to both sides dressings steeped in wax prepared from wax and oil of roses. Then bind it up gently, with a loose¹ bandage. The patient should sleep lying on his back with his head held between two pillows so that he does not move it either to right or to left; nor should he burden himself with chewing but should

¹ M reads 'with a middling bandage, neither loose nor tight'.

الفصل الرابع والعشرون فى علاج فكّ اللحي الأسفل

قل ما تتخلع الفكّان إلا فى الندرة وخلعهما يكون على أحد وجهين إمّا أن يزولا عن مواضعهما زوالا يسيرا فيسترخيا قليلا وإمّا أن يتخلعا تخلعا تامّا كاملا حتى يسترخيا الى نحو الصدر حتى يسيل لعاب العليل ولا يستطيع إمساكه ولا يطيق أن يطبق فكّه ويتلجلج لسانه بالكلام، فأما إن كان تخلعه يسيرا فقد يرجع فى أكثر الأحوال من ذاته بأيسر شيء، وأما إن كان الخلع تامّا كاملا فينبغى أن تستعجل رده بسرعة ولا تؤخره البتّة وهو أن يمسك خادم رأس العليل ويدخل الطبيب إبهام يده الواحدة فى أصل الفكّ فى داخل فمه إن كان الفكّ من الجهة الواحدة أو يدخل إبهاميه جميعا إن كان الفكّ من الجهتين وسائر أصابع يديه من خارج يسوّى بها ويأمر العليل أن يرخى فكّه ويطلقه للذهاب الى كلّ ناحية والطبيب يسوّى الفكّ ويدفع الفكّ² حتى يرجع الى موضعه، فإن عسر رده ولا سيّما إن كانت الفكّان جميعا فاستعمل الكماد بالماء الحارّ والدهن حتى يسهل ردهما ولا تؤخر ردهما البتّة كما قلنا، فإذا رجعا واستويا وانطبق فم العليل ولم يسترخيا فحينئذ فضع عليهما رفائد الخرق مع قيروطى قد صنع من شمع ودهن ورد ثمّ تربط برفق برباط مسترخى³، ويكون نوم العليل على ظهره ورأسه مثقف بين وسادتين لئلا يحركه يمينا ولا شمالا ولا يتكلّف مضغ شيء بل يجعل غذاءه حسوا ليّنا حتى اذا

متوسط لا 3. cett. ويدفع P، ويرفعه AH، 2. cett. فهو MP، 1. M. مسترخيا ولا شديدا

be on a diet of broth of corn starch until the pain is gone and the jaw is firm; then he may eat whatever he wishes. Let him use it gently; let him not work his mouth heavily in eating or drinking or yawning until the jaw is firmly knit and healed.

If the reduction of both sides is hard when it is a simultaneous bilateral dislocation, and there is no return to the proper position, then thereby in many cases fevers and perpetual headaches occur; sometimes the patient's belly is loosened and he vomits actual bile. When you see this you will know that he is doomed; in most cases in which this happens death follows in ten days.

20 ذهب الألم وانعقد الفك فليأكل ما بدا له ، وليستعمل ذلك برفق ولا يتحامل على فتح فمه عند الأكل والشرب والتثاؤب حتى ينعقد الفك ويبرأ ،

فإن عسر ردّ الفكّين إذا انفكت في وقت ما ولم تنصرف إلى مواضعهما فكثيرا ما يحدث من ذلك حميات وصداع دائم وربما انطلق 25 بطن العليل وربما تقيا مرارا محضا فإذا رأيت ذلك فاعلم أنه "تالف وكثيرا ما يموت من عرض له ذلك في عشرة أيام"

لا تالف لا محاله وقليل ما ترحى السلامه وهو اقرب الى الموت في 4. M. مدته عشرة ايام والله اعلم بذلك

CHAPTER TWENTY-FIVE. On the reduction of a dislocation of the clavicle and of the head of the humerus.

The clavicle is never dislocated inwards because of its continuity with the breast-bone; but sometimes it is dislocated outwards, and then it is detected by palpation. The replacement is thus: the patient is to lie on his back and stretch out both arms; then with the palm of your hand press heavily upon the place and it will go back. Then apply to it the plaster and pads, and bandage it up. As to the extremity of the clavicle, which is close to the shoulder and joined to it, it is only rarely dislocated; but if ever it is dislocated you must reduce it and set it straight as we have mentioned, by any convenient means. Then apply the plaster, pads, and bandages, and bid the patient keep quiet and still until it is healed. By this same treatment you may also reduce the head of the humerus when it is displaced.

الفصل الخامس والعشرون في ردّ فكّ الترقوة وطرف المنكب

أما الترقوة فإنّها لا تنفكّ من الجانب الداخل لاتصالها بالصدر وقد تنفكّ الى خارج ويتبيّن ذلك للحسّ، وجبرها أن يضطجع العليل على ظهره ويمدّ ذراعيه ثمّ تضغط الموضع بكفك ضغطاً بقوّة فإنّها ترجع، ثمّ تضع عليها الضماد والرفائد وتشدّها، وأما طرفها الذي يلي المنكب ويتصل به فليس ينخلع إلا في الندرة فإن انخلع يوماً ما فينبغي أن يرتدّ ويسوى على ما ذكرنا وما يتهيأ لك، ثمّ تضع عليه الضماد والرفائد والشّد وتأمّر العليل بلزوم الدعة والسكون حتى يبرأ، وبهذا العلاج بعينه تردّ طرف المنكب اذا زال أيضاً عن موضعه.

CHAPTER TWENTY-SIX. On the reduction of a dislocation of the humerus.

You should know that there are three ways in which the humerus may be dislocated. One is a dislocation down into the axilla, another is a dislocation toward the breast; it may also be dislocated upward, which is rare. It is not dislocated backward, because of the scapula; nor is it dislocated forward, on account of the tendons. Mostly it is dislocated and displaced down into the axilla, and particularly in those of a spare build; in such it quickly comes out and quickly goes back. But in those of a fleshy build it is the opposite; it comes out with difficulty and goes back with difficulty. Sometimes a man suffers a blow or a fall, so that the upper arm swells up with an effusion, whence he forms the opinion that there is a dislocation. So you must examine it to make sure of it and then proceed to treat it.

A dislocation down into the axilla may be diagnosed by comparing the sound and the dislocated humerus; for you will find an obvious difference between them; you will find a hollow at the head of the humerus, and in the axilla the head of the humerus may be palpated like an egg, and the patient is unable to lift his hand to his ear, and full movements are restricted. Similarly if it is displaced toward the breast or upward you will find it obvious to the touch and not hidden. The reduction of this dislocation will be quite simple if it be only recent or the patient be a child. To reduce it, his hand should be lifted up by an assistant, then you should put both your thumbs under his axilla and lift the joint up powerfully into its place, while the assistant lifts and stretches his hand upward; then he puts it down and the dislocation will at once go back. If it is not reduced by the means we

الفصل السادس والعشرون فى ردّ فكّ المنكب

اعلم أنّ المنكب إنّما ينفكّ على ثلاثة أوجه أحدها أن ينفكّ الى
جهة الإبط الى أسفل والثانى أن ينفكّ الى نحو الصدر ورتما انفكّ
الى فوق المنكب وذلك يكون فى الندرة ولا ينفكّ الى خلف لمكان
الكف ولا ينفكّ الى قدام لمكان العصب ، وأكثر ما ينفكّ ويخرج الى
أسفل نحو الإبط ولا سيّما فى الذين لحومهم قليلة لأنّه يخرج فيهم
سريعا ويدخل سريعا ، وأمّا الذين لحومهم كثيرة فإنّه بخلاف ذلك
أعنى أنّه يخرج بعسر ويدخل بعسر ، ورتما عرض لبعض الناس ضربة
او سقطة فتورّم المنكب ورتما حارّا فيظنّ به أنّه قد انفكّ فينبغى أن
10 تمتحن ذلك حتّى تقف على صحّته فحينئذ تتقدّم فى علاجه ،

ويتعرّف الفكّ اذا كان الى أسفل نحو الإبط إن تقرن¹ بين
المنكب المفكوكة والمنكب الصحيحة فإنّك تجد بينهما خلافا ظاهرا وتجد
رأس المنكب فيه تعقير وتحت الإبط عند اللمس رأس المنكب كأنّه بيضة
ولا يقدر العليل أن يرفع يده الى أذنه ولا أن يحركها جميع الحركات ،
15 وكذلك إن انفكّ نحو الصدر او الى فوق فإنّك تجد ذلك ظاهرا لللمس
لا يخفى ، وهذا الفكّ قد يسهل ردّه اذا كان طريّا او كان العليل
صبيّا ، وردّه أن يرفع خادم يده الى فوق ثمّ تجعل أنت إبهامى
يديك تحت إبطه وترفع المفضل بقوة الى فوق الى موضعه والخادم يرفع
يده ويمدّها الى فوق ثمّ يحطّ بها الى أسفل فإنّه يرجع بسرعة ، فإن

H. معرف A. يقرب 1.

have stated, being a dislocation of many days' standing, the patient should take a hot bath and use relaxing and softening fomentations, such as decoction of marsh mallow root and fenugreek and melilot. Then the patient should lie on his back and you put under his axilla a ball of wool of moderately hard consistency. Then the doctor should put his heel on the ball and grasp the patient's hand and draw it downward, while pushing the ball with his foot,¹ and it will straightway be reduced. Or, if you prefer, reduce it in this way: get a man taller than the patient to stand on one side and pass his shoulder under the patient's axilla and lift it up until the patient is suspended in mid-air, while another assistant pulls the patient's hand down towards his lower abdomen (if the patient is light it will be necessary to hang a weight from him); then the dislocation will straightway be reduced.

¹ Here the reading of M has been adopted. The other MSS., read 'Then the doctor should put his heel (H 'his palm'; P 'his two palms') on the ball and powerfully raise the head of the humerus, drawing the patient's hand downwards, while another assistant holds the patient's head so that it does not shift downwards.'

20 لم يرجع بما ذكرنا وكان للفك منذ حدث أيام كثيرة فينبغي أن يستحم
 العليل في الماء الحار ويستعمل النطول الذي يرخى ويلين مثل أن
 يطبخ أصل الخطمي والحلبة وإكليل الملك في الماء ويستعمله ثم
 يستلقى العليل على ظهره وتضع تحت إبطه كرة من صوف تكون
 معتدلة بين اللين والشدة ثم يجعل الطبيب عقبه² على الكرة³ ويمسك
 25 يد العليل بيده ويمدّها الى أسفل ويدفع الكرة برجله³ فإنه يرجع على
 مقامه

وإن شئت رددته⁴ على هذا الوجه وهو أن تحضر رجلا أطول
 من العليل وتوقفه⁵ من ناحية الجنب ويدخل منكبه تحت إبط العليل
 ويرفع إبطه الى فوق حتى يكون العليل معلقا في الهواء وخادم آخر
 30 يجذب يد العليل الى أسفل بطنه فإن كان العليل خفيفا فينبغي أن
 يعلق به شيء آخر ليثقله فإنه يرجع الفك من ساعته⁵

ويرفع رأس المنكب بقوة ويد M, 3. cett. كعبه P, كفيه H, كهه M, 2.
 (A ويدا) العليل يجذبها الى أسفل وخادم آخر يمسك رأس العليل
 الى جنبه ويجعل. 5. cett. رده M, 4. cett. لثلا يتحرك الى أسفل
 العليل ابطه على منكب الرجل وخادم آخر يجرد يد العليل الى أسفل
 M. حتى يبقى العليل معلقا في الهواء فانه يرجع

It is also reduced by another method: that is, to fix in the ground a long spar of wood; its head should be of a round shape like the pestle of a mortar, neither massive nor slender; then after a soft pad has been put on the head of the spar it should be placed under the axilla of the patient, who should be standing alongside the spar; then let his hand be drawn downward on one side and his body on the other, powerfully. Then the joint will immediately return to its place.¹

If it proves difficult to reduce it by any of the means we have stated, employ this treatment: take a wooden spar some two cubits in length, two fingers thick, and four wide; it should have a round head to facilitate its introduction into the hollow of the axilla; of this shape (fig. 195). Then you

¹ The technique in M is different from that in the other MSS. but would clearly be at least as effective: '... like the head of the pestle of a mortar, neither massive nor slender. Then let the patient stand on something set up over against the spar and let his axilla be placed on the head of the spar after some soft dressings have been put on it; and an assistant is to pull on the patient's hand downward and what has been placed under his feet is to be taken away so that he hangs above the ground; then straightway his humerus will go back.'

وقد يرد أيضا على وجه آخر وهو أن تركز في الأرض خشبة
 طويلة يكون رأسها مستدير الشكل⁶ كقهر الهاون⁶ ليس بغليظ ولا برقيق
 ثم⁷ توضع تحت إبط العليل بعد أن تضع على رأس الخشبة خرقة لينا
 35 والعليل واقف على طول الخشبة ثم تمتد يده إلى أسفل من الناحية
 الأخرى⁸ ويمتد جسده أيضا من الجهة الأخرى⁹ بقوة فإن الفصل يرجع
 إلى موضعه بسرعة⁷

فإن عسر رده بجميع ما ذكرنا فاستعمل هذا العلاج وهو أن
 تأخذ خشبة طولها نحو¹⁰ ذراعين وعرضها قدر أربع أصابع وغلظها قدر
 40 أصبعين يكون لها رأس مستدير ليسهل دخولها في عمق الإبط على
 هذه الصورة¹²:

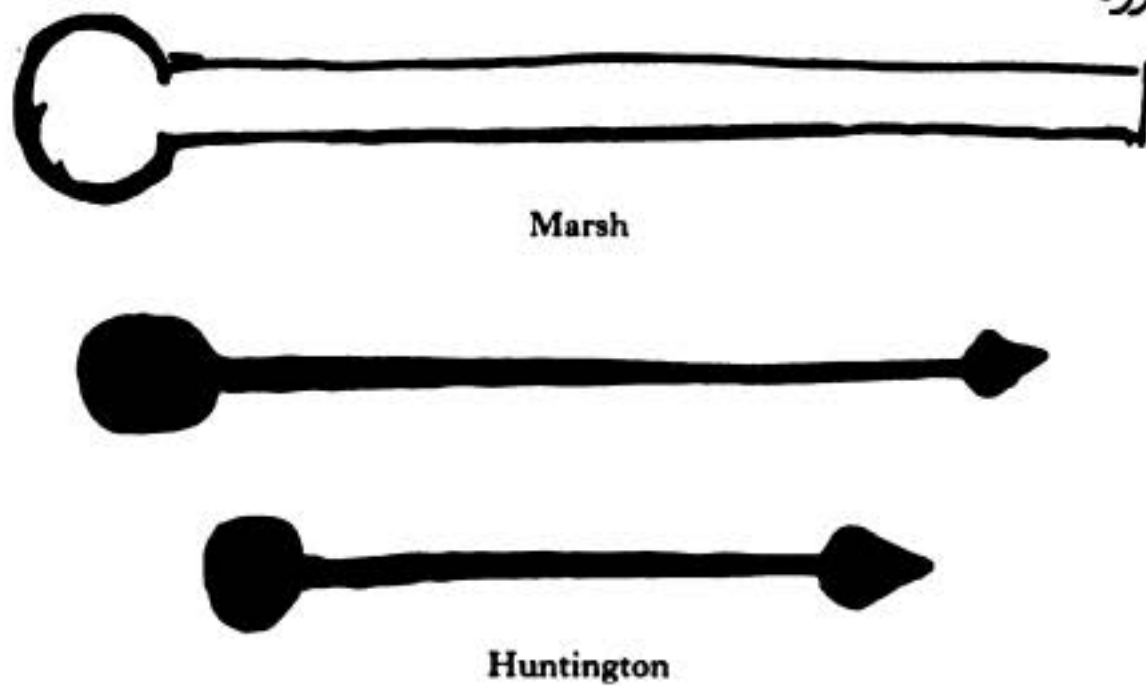


Fig. 195

Huntington

يقف على شيء مرتفع قليلا بازا 7. M. كراس قهر الهاون, A. om. 6.
 الخشبة ويجعل إبطه على رأس الخشبة بعد أن تعمل عليها خرقة لينة
 ويمسك الخادم بيد العليل يجرها إلى أسفل وينزع الذي تحت رجليه
 H. الامن 8. M. فيتعلق على الأرض فسيرجع منكبه لوقته

9. A. الثانيه 10. BP, cett. قدر 11. AV. دخوله 12. deest

figura in codice P.

bind on the round head soft rags so that the wood will not hurt the patient. Then it is placed under the patient's axilla, and his whole hand and arm are stretched down over the spar, which is to be bound down to the upper arm, the forearm, and the tip of the hand. Then let the arm be placed cross-wise over the rung of a ladder and the hand stretched downward, and let the rest of the body hang down on the other side; then the joint will very quickly go back.

Once it has gone back properly, in whatever way is possible, there should be put under the axilla a ball of wool of moderate size; then apply the plaster prepared from mill-dust with olibanum and egg-white, all round the shoulder. Then firmly bandage the ball under the axilla and carry the bandaging round over the plaster. Sling his hand from his neck, then let him be left without moving his hand for a week. The patient's diet should be light until the limb gets strong, for that will hasten the cure. After five or seven days it can be unfastened and he can make trial of its movement; if it is firm and not slack then it is healed.

If the joint is frequently dislocated, on account of a humidity arising in it or some other cause, then use should be made of the cautery with three prongs spoken of earlier, in the book on cauterizations.

If you do all this and loosen the bandaging after a week and the joint is still not firm, and you repeatedly plaster it and bandage it, and it is still loose and comes down and dislocates and you are unable to raise it up, then you may know that the tendons at the head of the humerus are either

ثم تربط على الرأس المستدير خرقة لينة لئلا تؤذي الخشبة
 العليل ثم يصير تحت الإبط وتمد اليد كلها والذراع¹³ على الخشبة الى
 أسفل وتربط الخشبة على العضد والساعد وطرف اليد ، ثم توضع الذراع
 45 على عارضة سلم بالعرض وتمد اليد الى أسفل ويترك سائر الجسد
 معلقا من الناحية الأخرى فإن المفصل يدخل من ساعته ،

فإذا تم دخوله على آى وجه أمكن فينبغى أن توضع تحت الإبط
 كرة معتدلة القدر من صوف ثم يحمل الضماد المهيأ من غبار الرحي¹⁴ مع
 اللبان¹⁴ وياض البيض على المنكب كله كما يدور من فوق ثم تشد الكرة
 50 من تحت الإبط شدا محكما ويدار بالرباط¹⁵ على¹⁶ الضماد من فوق¹⁶ وتعلق
 يده الى عنقه¹⁷ ويترك لا يحرك يده سبعة أيام ، وينبغى أن يجعل
 غذا¹⁸ العليل قليلا حتى يقوى¹⁸ العضو فهو أسرع لبروئه ، ثم تحل بعد
 السبعة الأيام او الخمسة ويدرب بالحركة فإن ثبت ولم يسترخ فقد برئ ،
 فإن كان المفصل ينخلع مرارا كثيرة لرطوبة تعرض له او لعلة
 55 أخرى فينبغى أن يستعمل فيه الكى بالثلاثة سفافيد على ما تقدم فى
 باب الكى ،

فإن صنعت هذا كله وحللت الرباط بعد سبعة أيام ولم يثبت
 المفصل ورددت الضماد والشد عليه مرات ولم يثبت وسقط واسترخى ولم
 تستطع رفعها الى فوق فاعلم أن عصبها¹⁹ الذى فى¹⁹ رأس المنكب قد

AHM. او الذراع 13.

M. الابط من فوق الضماد 16. H. بالرفاد M, الرباط 15. om. M. 14.

cett. الى B, التى فى MV. 19. يقوم H, عدا 18. M. ترقوته 17.

cut through or stretched or loosened; in which case you may know that the joint will never stay firm in its place.

As to the dislocation toward the chest and breast, and posteriorly, the reduction of this is done by thrusting and extension with both hands until it goes back. And apply the usual bandaging and treatment until it is healed.

If, after it has healed, a callosity arises in it, and it is slow in movement, the patient should take frequent hot baths until that callosity is softened and the member returns to its original condition.¹

¹ In place of the last four paragraphs, P has the last two paragraphs of the next chapter, ending at 'until the joint softens'.

٦٥ انقطع او امتد او استرخى فاعلم حينئذ أن المفصل لا يثبت في موضعه
أبداً،

وأما الفك الذى يكون نحو الصدر والشدى وإلى خلف فردّه يكون
بالدفع والمدّ بالأيدى حتى يرجع، ويستعمل فيه سائر الشدّ والعلاج
حتى يبرأ،

٦٥ فإن عرض بعد البرؤ جسا في العضو وأبطأ في الحركة فليستعمل
العليل الحمام مرارا كثيرة حتى يلين ذلك الجسا ويعود الى طبيعته
الأولى،

CHAPTER TWENTY-SEVEN. On the treatment of a dislocation of the elbow.

The elbow is with difficulty dislocated and with difficulty put back. Now dislocation may be in all directions, and particularly forward and backward. Whatever way it is dislocated it will not be concealed from you, because it is both visible and palpable, and whenever you compare the dislocated elbow with the sound one it is quite openly and plainly manifested; for the elbow joint is hollow and the patient cannot flex the forearm back or touch his shoulder with it. You must hasten and reduce the dislocation as rapidly as possible before an abscess occur. For if an abscess occur the reduction of it is difficult and maybe it will never be healed; especially when it is a posterior dislocation, for this is the worst and most painful of all the kinds of dislocation, and often it is fatal. Now when it is one of those that can be reduced, the way to reduce it is for an assistant to perform a two-handed extension of the patient's hand, the patient's forearm being opened out, while the doctor's hands are above and below the elbow joint and he thrusts the joint with both thumbs together or with the root of his palm, until it returns to its place. If it be an anterior dislocation, it may go back if the hand is bent sharply back until it strikes its own shoulder with the root of the palm.

If the dislocation does not respond to reduction, apply very strong and powerful extension. For this, let two assistants pull on the arm while two other assistants hold the patient against the extension. Then the arm should be rotated in all directions after the limb has been wrapped in a long folded cloth or a broad wrapper. When the doctor begins manipulating the joint he should anoint his hands with oil so as to assist, by its lubrication, the movement of the joint; then he should thrust the joint powerfully until it

الفصل السابع والعشرون فى علاج فك المرفق

إن مفصل المرفق ينفك بعسر وكذلك يرجع بعسر أيضا وهو
ينفك الى جميع الجهات ولا سيما الى قدام او الى خلف وفكّه لا
يخفى عليك لأنه واقع تحت البصر وتحت اللمس الى أى شكل انفك¹،
5 وإذا قرنت المرفق المفكوك بالصحيح تبين ذلك لك بيانا ظاهرا بتقدير
المفصل ولا يستطيع أن يثنى الذراع ولا يمس به منكبه، وينبغي أن
تبادر وترد الفك من ساعتك قبل أن يعرض له ورم حار فإنه إن عرض
له ورم حار عسر رده وربما لم يبرأ البتة ولا سيما اذا كان الفك الى
خلف فإنه أروا ما يكون من جميع أنواع الفك وأشدّها وجعا وكثيرا ما
10 ينزل معه الموت، وجبره اذا كان ممّا يمكن أن يرجع أن يمدّ خادم
يده بكتفى يديه وذراعه مبسوطة ويذا الطبيب من فوق المرفق وممن
تحتّه وهو يدفع المفصل بإبهام² يديه جميعا او بأصل كفّه حتى يرجع
الى موضعه، وأما إن كان الفك الى قدام فقد يرجع بأن تثنى اليد
بمرة حتى تضرب بأصل كفّها المنكب الذى تحاذيه³،
15 فإن لم يجب الفك الى الرجوع فاستعمل المدّ الشديد القووى
جدا وهو أن يمدّ الذراع خادما⁴ "ويمسك العليل" خادما أيضا لئلا
يزول عند المدّ ثم تدار الذراع الى كلّ جهة بعد أن تلف على يده⁵
ثوبا مطويا او قماطا عريضا، وإذا باشر بيديه الطبيب المفصل مسحها
بدهن ليكون تعين فى إزلاق المفصل بسهولة ثم يدفع المفصل دفعا

1. P, بجانبه, B بحذايه. 3. cett. اباهم, P. 2. M. انقلب اليه. 1.
cett. يديه, M. 5. cett. ويمسك, A ويبسط, M ويمسكه.

goes back. After its reduction he should apply to it a plaster having some styptic and absorbent qualities, with egg-white; and put on a firm bandage and suspend the patient's arm from his neck and leave it for some days. Then undo it; and if the joint remains fixed in its place, then untie the bandaging and leave it. If you see that the joint is not thoroughly firm, replace the plaster and bandaging and leave it for a few more days until it is firm; then untie it.

If, after the reduction and unbandaging of the joint, it becomes stiff and is difficult to move, soften it in the bath and apply gentle friction and massage until it is softened, or apply to the joint the tail of a fat-tailed sheep; bind it on and leave it on for a day and a night; then remove it and send him to the bath, and when he sweats apply moderate friction to the joint; then replace the tail and again and again, alternating with the bath, until the joint softens. If you prefer, apply to it, and bandage on, fresh cow-dung lightened¹ with butter. Do this a number of times and it will soften and return it to its original state.

¹ This is the reading of M. The other MSS. read 'heated'.

20 شديدا حتى يرجع، وبعد رجوعه ينبغي أن يحمل عليه الضماد الذي
 فيه قبض وتجفيف مع بياض البيض ويشد شدا محكما وتعلق الذراع من
 عنق العليل وتترك آياما ثم تحل فإن ثبت المفصل في موضعه فحل
 الرباط عنه واتركه، وإن رأيت المفصل لم يشتد نعلما فأعد الضماد
 والرباط واتركه أيضا آياما حتى يشتد ثم حله،
 25 فإن حدث له جسا بعد رجوع المفصل وحله⁶ وعسر في الحركة
 فليستعمل الترطيب في الحمام والدلك اللطيف والغمر حتى يلين أو
 اجعل على المفصل آلية كبش سمين ثم اربطها واتركها عليه يوما وليلة
 ثم انزعها وأدخله الحمام، فإذا عرق فاعرك المفصل عركا معتدلا ثم
 أعد عليه الآلية مرة⁷ وثانية⁸ وثالثة مع دخول الحمام حتى يلين، وإن
 30 شئت أن تجعل عليه خشى⁹ البقر رطبا مستخفا¹⁰ مع السمن وشده عليه
 افعل ذلك مرات فإنه يلين ويرجع الى حالته الأولى،

6. H, om. MP. وحكة. 7. BH. ثانية. 8. B, خشا. cett. 9. M,
 cett. مسخنا.

CHAPTER TWENTY-EIGHT. On the treatment of a dislocation of the wrist.

The carpus of the hand is often dislocated. Unlike other joints, the reduction is easy, but there should be haste to reduce it as soon as it is dislocated, before the place swells or an abscess occur. The way of reducing the dislocation is to place the patient's wrist upon a board while an assistant stretches the hand, and the doctor puts the palm of his hand upon the prominence of the joint and applies pressure on it until it goes back. But he should examine: if it is a displacement toward the ventral aspect of the hand, the patient should place the back of his hand upon the board for extension and reduction; but if it be a luxation toward the dorsum of the hand, then the inner part¹ of the hand should be laid upon the board so that the doctor's hand may come upon the prominence of the joint itself. If it go back at once, good; but if not, bandage it with a plaster that settles swelling and let it be. Do not revert to it, for it will not tolerate that, and you will not be able to effect its reduction after some days have passed. But the joint will retain its deformity; and the patient will in no wise be harmed except if his hand is slackened so that he be unable to grip anything; then you may know that the tendons are either severed or bruised. In this situation there is no method but to strengthen it by cauterization; this sometimes helps but sometimes is of no use at all. When the reduction of the joint is complete, apply to it the plaster we have described, then bandage it and leave it for five days; then loosen it and try out the hand. If movement be hampered and any hardness occur in it, soften it repeatedly with hot water and sweating until it be softened.

¹ i.e. the palmar aspect.

الفصل الثامن والعشرون في علاج فك الممص

مصم اليد كثيرا ما ينفك ورتة فكه يسهل خلاف سائر المفاصل إلا أنه ينبغي أن يسرع برتة فكه الساعة التي ينفك فيها قبل أن يسم الموضوع أو يعرض فيه ورم حارء ورتة فكه أن تضع مصم المليل على لوح ويمد خادم يده ويضع الطبيب كفه على نتو المفصل ويدفعه حتى يرجع إلا أنه ينبغي أن ينظر إن كان الفك قد زال الى باطن اليد فليضع المليل ظاهر يده على اللوح عند المد والرتة وإن كان الفك بارزا الى ظاهر اليد فليكن وضع يده الباطنة على اللوح لتقع يد الطبيب على² نفس نتو المفصل³، فإن رجح من حينه وآلا فشده بضماد مسكن للورم واتركه لا تعارده فأنته لا يحتمل ولا تستطيع على رتة بعد أن تحض له أيام³ إلا أن المفصل يبقى على عوجه ولا يضر المليل شيئا إلا إن استرخت اليد ولم تستطع على قبض شيء فحينئذ تعلم أن المصم انقطع أو ترفض فلا حيلة فيه إلا أن يشد بالكي فريما نفع وريما لم ينفع ذلك شيئا، فإذا تم رتة الممص فاحمل عليه الضماد الذي وصفنا ثم يشد ويترك خمسة أيام ثم يحل وتدرب اليد فإن تعذرت حركتها وعرض فيها شيء من الجسا فليتها بالماء المستخن والمحرك مرآت حتى تلين،

1. AHP. لم يرك. 4. P. > ثلاثة <. 3. M. انتو الرتد. 2. cett. و. BV. 1.

CHAPTER TWENTY-NINE. On the treatment of dislocation of the fingers.

The fingers may be dislocated in any direction. When one of the fingers is dislocated dorsally or ventrally, then extend the finger and thrust the dislocation with your thumb until it goes back. Then bind the head of the phalanx, suspending it in the direction in which it was dislocated, and leave it for two days. Then unbind it and extend it so that it may straighten out all that day. Then at nightfall bind it in just the same way. Continue to loosen it by day and to exercise it with movement, bandaging it by night. Do this for some days until it is knit. Do the same with it if it is a ventral dislocation, binding it in that direction, and treat it as explained above until it is healed. Do likewise with dislocations in other directions.

الفصل التاسع والعشرون فى علاج فك الأصابع

الأصابع قد تنفك الى كل جهة فمتى انفك منها أصبع السرى
ظاهر الكف او باطنها فمد الأصبع وادفع الفك بإبهامك حتى يرجع ،
ثم اربط رأس الأصبع وعلقها نحو الجهة التى انفكت اليها واتركها
5 يومين ثم أطلقها ومدّها حتى تعتدل قائمة يومها ذلك فإذا كان
بالليل ربطتها على الوصف نفسه فلا تزال تحلّها بالنهار وتدرّسها
بالحركة وتربطها بالليل تفعل ذلك آيما حتى تشتدّ ، وكذلك تفعل
بها إن انفكت الى باطن اليد فتربطها الى نحو الجهة نفسها
وافعل بها فعلتك الأولى حتى تبرا ، وكذلك افعل بها متى انفكت
10 الى سائر الجهات،

1. الكف PV, om. M. 2. <بقية> M.

CHAPTER THIRTY. On the treatment of dislocation of the spinal vertebrae.

When any of the vertebrae of the back or the neck are completely dislocated or a number of vertebrae are displaced, there is no treatment in this case for death is hastening toward the patient. The sign of this is that the injured man passes a motion involuntarily, being unable to hold it back; often too some of his limbs go limp, either both legs or both arms or one of them. If, as often happens, a single vertebra is displaced, the displacement may be in any of four directions. When there is a displacement backwards it is called 'curvature of the spine'. As to its treatment: examine it; if the curvature dates from childhood then there is no treatment or cure at all for it. As for the sort that occurs from a fall or a blow or the like, the Ancients indulged in lengthy dissertations thereon, giving many kinds of treatment, the greater part of which is of no use. But I have abbreviated from it, making a little which will serve in place of their much, consisting in my clarification and exposition of the sense. I have also depicted the instrument differently from their account and their explanation.

I say then, that in a curvature occurring forward there is no technique or cure for it. And likewise in a curvature laterally. The only curvature that can be treated is that of the dorsal spine exclusively, by the means I now describe. The patient should be stretched prone upon a level bench near a wall, and a soft palliasse should be spread under him so that his chest may not be hurt. Then put a straight spar, set in a hole in the ground at the end of the bench where his head is, and another spar where his feet are at the

الفصل الثلاثون في علاج فك خرز الظهر

متى حدث فك لخرزة من خرزات الظهر او العنق الفك التام او زالت خرزات كثيرة عن مواضعها فلا علاج فيه لأن الموت يسرع السي العليل، وعلامة ذلك أن براز العليل يخرج من غير إرادة لا يستطيع 5 إمساكه وكثيرا ما يسترخى منه بعض أعضائه إما ساقاه وإما ذراعاياه او واحدة منها، وإما إن زالت خرزة واحدة عن موضعها فكثيرا ما تنزل ويكون زوالها الى أربع جهات فالتى تنزل الى خلف تسمى حذبة، وإما علاجها فهو أن تنتظر فإن كانت الحذبة قد حدثت من الصبا فلا علاج فيها ولا منها برء البتة، وإما التى حدثت عن سقطة او ضربة 10 ونحو ذلك فقد ذكرتها الأوائل بضروب من العلاج بكلام طويل لا يعود أكثره بفائدة وقد اختصرت من ذلك ما يغنى قليله عن كثير مما أتوا به من تقرتى للمعنى وشرحى له ³ وصورت الآلة ³ خلاف ما بيّنوه وشرحوه،

فأقول إن الحذبة التى تحدث من قدام فى الصدر فلا حيلة 15 فيها ولا برء منها وكذلك التى الى الجهتين أيضا وإنما تعالج منها التى تحدث فى الظهر خاصة بما أنا واصفه، وهو أن تمد العليل على وجهه على دكان مستو بقرب حائط وتبسط تحته وطاء رطبا لئلا يؤذى صدره ثم تضع خشبة قائمة مغروسة فى حفرة فى الأرض فى طرف الدكان نحو رأسه وخشبة أخرى نحو رجليه فى الطرف الآخر من

cett. الا انه M، وصورته BV، 3. MV. مع 2. BMV. منهما 1.

other end of the bench. Let an assistant hold this spar, which is not to be firmly fixed in the hole, while another assistant holds the other in the same way. Then wind round the patient's chest and beneath his axillae a soft strong wrapper, and stretch one end of the wrapper to the spar at his head, and tie it to it. Then bind other wrappers: over his hips, his knees, and by both tendons of Achilles; then bring the wrappers together and tie them to the other spar at his feet. Then each assistant extends the spar with the tie towards himself; the two spars will not shift from their places in which they are planted, but, as we have said, they are not to be fixed. Meanwhile the doctor is to press hard with both his palms upon the spine until it goes back; or he may place a board upon it and apply pressure to the board with his feet until it goes back. But if it does not go back under this treatment then let a board be taken, about three cubits long, and let a place be hollowed out in the wall, which, as we said, should be near the patient, into which you put the end of the board; then place the mid-point of the board upon the hump, and he—the doctor—should place both his feet on the other end and strongly thrust upon the spine until it is forced back into position.

If you wish you may operate by means of a winch turned by hand; thus: you fix in the ground at the head of the patient, at one end of the bench, two wooden spars each one cubit long; and the same at the lower end, at his feet; there should be the distance of a span between the spars (of each pair). In each spar there should be a hole in which the shaft may run, and each spar should be firmly fixed in the ground so as not to move at all. Then you introduce a round piece of wood, the shaft on which the rope is wound, into the two openings of the two wooden spars. At one end of each shaft

20 الدِّكَّانُ وخادمٌ يمسك الخشبة ولتكن غير موثقة⁴ وخادم آخر
يمسك الأخرى على تلك الهيئة ثم تلف على صدر العليل وتسحب
إبطيه⁵ بقمط لَين وثيق وتمد طرف القمط الى الخشبة التي عند رأسه
وتربطه فيها ثم تشد بقمط آخر فوق وركيه وفوق ركبتيه وعند عرقوبيه ثم
تجمع الرباطات كلها وتربطها في الخشبة الأخرى التي عند رجله ثم
25 يمد كل خادم⁶ الى جهته⁶ الخشبة بالرباط ولا تنزل الخشبتان من
مواضعهما المركوزة فيها إلا أنهما غير موثقة كما قلنا والطبيب يضع كفيه
على الخرزة⁷ بقوة حتى ترجع او يضع عليها لوحا ثم يتكى على اللوح
برجليه⁸ حتى ترجع، فإن لم ترجع بهذا العلاج فتأخذ لوحا يكون
طوله نحو ثلاثة أذرع وتحفر في الحائط الذى قلنا أن يكون بقرب
30 العليل مكانا تدخل فيه طرف اللوح ثم تضع وسط اللوح على الحدة
ويضع⁹ رجله الطبيب⁹ على الطرف الآخر ويشد شدا جيدا حتى يضغط
الخرزة وترجع الى مكانها،

وإن شئت أن تصنعه باللولب الذى يقتل باليد وهو أن تغرز
في الأرض عند رأس العليل في آخر الدِّكَّان خشبتين يكون طولهما
35 ذراعا وعند رجله في آخر الدِّكَّان أيضا خشبتين وليكن بعد ما بين
كل خشبة¹⁰ شبرا وقد صنع في كل خشبة ثقبه فيها يجرى اللولب
وتوثق الخشب كلها في الأرض نعما حتى لا تتحرك البتة وتدخل
عودا مدورا وهو اللولب الذى يلوى فيه الرباط في ثقبتي الخشبتين

M, الى جهه. 6. cett. اباطه, BM, ابطه, V, اباطيه. 5. H. الجلدة. 4.
الطبيب. 9. PV. برجله. 8. H. الداره, P. الحدبه. 7. H. ويربطها في
B. خشبتين, AM, خشبة خشبة. 10. BP. رجله

is a hole into which is firmly fixed a piece of wood a span long by which it is wound. Likewise with the other two spars. Then bind the wrapper that you have bound round his chest to the shaft at the patient's head, and those bound round his legs to the shaft at his feet. Then have an assistant standing at each shaft to turn with his hand the handle by which the shaft is revolved, while the doctor straightens out the curvature in the way we have described.

This is the figure of the winch, the bench and the patient (fig. 196A).¹ After the spine has been restored and the place has been straightened it will be necessary for you to apply an absorbent plaster with egg-white, then packing, then over the plaster apply a flat splint about three fingers wide and long enough to cover the site of the curvature and several sound vertebrae on either side. Then let it be bandaged as is needful and let the patient follow a mild diet until he is cured. If after he is healed there still remains some prominence at the site, it will be necessary to employ remedies to

¹ The figure in H comes at this point.

وفى طرفه ثقب قد وثق¹¹ فيه عود طوله شبر بما يلوى وفى الخشبتيين
 40 الآخرين مثل ذلك، ثم تشدّ الرباط الذى شدت فى صدر العليل
 فى اللولب الذى عند رأسه والرباطات التى شدت فى ساقيه فى اللولب
 الذى عند رجليه، ثم يقف عند كلّ لولب خادم يفتل يده بالفتل الذى
 يلوى به اللولب والطبيب يسوّى الحدة على ما قدّمنا،
 وهذه صورة اللولب والدكان والعليل :

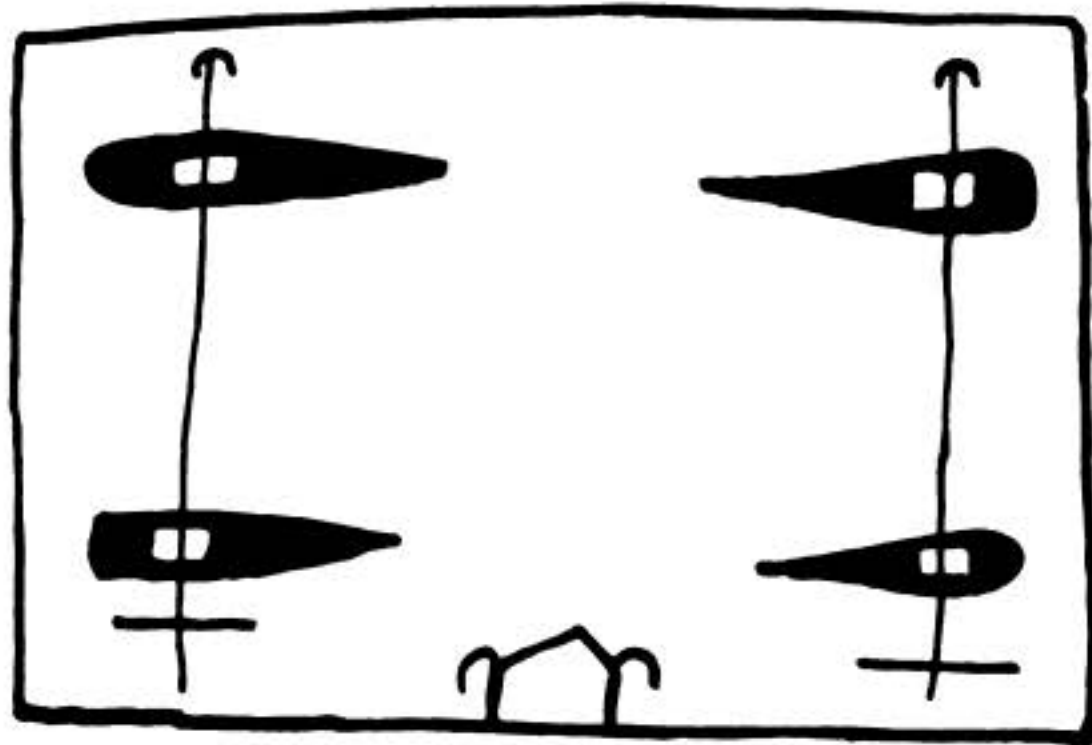


Fig. 196A

Huntington

ثم بعد أن ترجع الفقارة ويستوى الموضع فينبغى أن تحمل الضماد
 45 المجفف ببياض البيض ثم المشاقة ثم تضع من فوق الضماد جبيرة من
 لوح يكون عرضه ثلاث أصابع أو نحوها ويكون طوله قدر ما يأخذ¹² موضع
 الحدة وعلى بعض الخرز الصحيح ثم يربط بالرباط الذى ينبغى
 ويستعمل العليل الغذاء اللطيف حتى يبرأ، فإن بقى بعض النتو فى
 50 الموضع فى آخر البرء فينبغى أن تستعمل الأدوية التى ترخى وتلين مع

11. AMV, cett. 12. <من> H.

relax and soften the parts, together with the use for a long time of the flat splint we described; in this case a leaden plate may be employed.

Sometimes there occurs a prominence at the end of the dorsal vertebrae, from which one may form the opinion that there is a dislocation, whereas it will be a superfluous bone that has become prominent; do not interfere with it by this treatment, for death may result (fig. 196B).¹

¹ M puts the figure of the bench at the end of the chapter. The captions in M indicate a handle at each end of the right-hand shaft, which conflicts with the text.

استعمال اللوح الذى وصفنا زمانا طويلا وقد تستعمل فى ذلك صفيحة
رصاص،

وقد يعرض نتو فى آخر¹³ خرزات¹⁴ الظهر فيظن به تخلع¹⁵ ويكون
ذلك عظم زائد¹⁶ قد نتا فلا تتعرض له بهذا العلاج فربما حدث¹⁷ الموت،

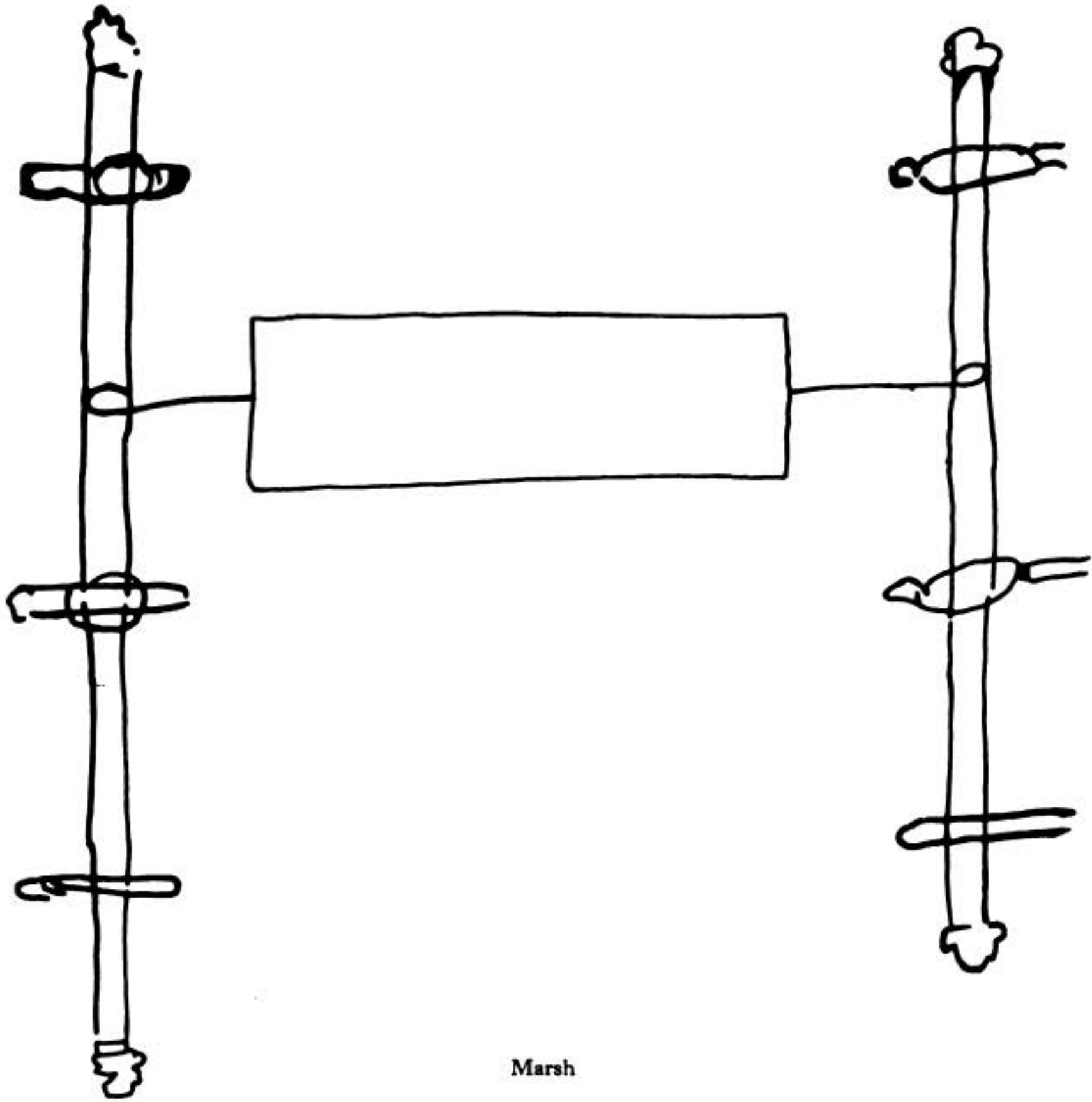


Fig. 196B

13. om. AHM. 14. حوات M, A s. p. 15. خلع HP, انه تخلع AM.
16. AM, om. cett. 17. احدث AM.

CHAPTER THIRTY-ONE. On the treatment of a dislocated hip.

You should know that a complete dislocation alone is sustained by the hip and shoulder joints; they do not sustain the lesser displacements, with concavity, as do the other joints. Now the hip joint is dislocated in four directions, interior, exterior, posterior, and anterior. Most commonly it is dislocated interiorly; and rarely is it dislocated anteriorly or posteriorly. The indication of an internal dislocation is that when you compare the patient's sound leg with the injured leg it will be longer and the knee will be prominent as compared with that of the sound leg; nor will it be possible for the patient to flex the foot back on the groin; and there will be an obvious swelling near the groin because the head of the femur has moved there. The sign of the occurrence of an external dislocation: the symptoms will be the exact contrary to these. The sign of an anterior dislocation is that the patient can stretch his leg out fully but cannot flex it without feeling pain in the knee; and if he tries to walk he will be unable to walk forward; and he has retention of the urine and his groin swells, and in walking he hobbles upon his heel. The sign of a posterior dislocation is that he cannot extend the knee, nor can he flex it before flexing the hip; also the leg will be shorter than the other, the groin will be relaxed, and the head of the femur will be evident at the lumbar region.

As to the reduction of the various forms of this dislocation, you must examine the case and if it be an old dislocation which the patient has suffered from for a long time and the reduction of which has not been contrived and which remains as it was, there is no treatment for it at all, nor should any be attempted. But in that case whose dislocation is recent,

الفصل الحادى والثلاثون فى علاج الورك المفكوك

اعلم أن مفصل الورك ومفصل المنكب إنما يعرض لهما الفك فقط
ولا يعرض لهما ما يعرض لسائر المفاصل من الزوال اليسير والتغير،
ومفصل الورك ينفك على أربعة أوجه وذلك أنه ينفك الى داخل وإلى
خارج وإلى قدام وإلى خلف وأكثر ما ينفك الى داخل وقبلى ما ينفك الى
قدام او الى خلف، وعلامة فكه الى داخل أنك اذا قرنت ساق
العليل الصحيحة بالمریضة تكون أطول وتكون الركبة ناتية أكثر من
الصحيحة ولا يقدر العليل أن يثنى رجله عند الأريّة ويكون الموضع
الذى يلي الأريّة وارماً^١ وربما بيّناً^٢ من قبل أن رأس الفخذ قد صار الى
هناك، وعلامة الذى يعرض له الفك الى خارج تكون أعراضه ضدّ هذه
الأعراض، وعلامة الذى يعرض له الفك الى قدام فإنه يبسط ساقه
على التمام إلا أنه لا يشبهها من غير ألم يكون فى الركبة وإن رام
المشى لم يقدر على ذلك الى قدام ويحتبس بوله وترم أريّته وعند
المشى يكون وطئه^٢ على العقب، وعلامة الذى يعرض له الفك الى
خلف أن لا يبسط الركبة ولا يقدر على أن يشبهها قبل أن يثنى الأريّة
وتكون ساقه أيضاً أقصر من الأخرى والأريّة مسترخية ويكون رأس الفخذ
عند موضع الخاصرة بيّناً،

وأما ردّ أنواع هذا الفك فهو أن تنظر فإن كان الفك قديماً قد
أزمن بصاحبه ولم يحاول ردّه وبقى على حالته فليس فيه علاج البتّة
فلا ينبغى أن تعرض له، وأما الذى فكه حديث وكان من أى نوع

1. om. HP. 2. وطيه codd.

whichever of the four kinds of dislocation it be, hasten to rotate the joint and extend it internally and externally and move it to the right and the left; for often it will return and no further treatment will be needed. But if it does not go back thus, you must have ready a sturdy and powerful assistant to extend the leg from below, either with both his hands or with a wrapper bound upon the leg above the knee; while another assistant pulls from above by putting his hands under the patient's axillae; then you should bind a soft wrapper upon the root of the thigh, with a third assistant to hold the end of the bandage. Then extension should be made either anteriorly from the direction of the groin to the direction of the clavicle, or posteriorly toward the dorsal spine. Let them all make their extension simultaneously so the patient is lifted up bodily and remains suspended. This kind of extension is common to all four kinds of dislocation. If the dislocation goes back by the way we have said, good. Otherwise, each kind must have the special treatment I shall describe.

When it is an internal dislocation then the special reduction is for the patient to lie upon his sound side; then apply a wrapper to the root of the hip in the space between the head of the femur and the part below the groin; then carry the bandage upward from the groin toward the upper part of the body, in the direction of the clavicle. Then another powerful and sturdy assistant is to take hold of his arms while the thick part of the afflicted thigh is clasped and strongly extended outward; then it will return to its place. This kind of treatment is easier than the others for the reduction of this limb.

But if you find it refractory and it does not answer to this method of treatment, then the patient's two feet will have to be bound together with

كان³ من الأربع الأوجه من الفك فبادر الى أن تلوى الفصل وتمدّه⁴
الى داخل وإلى خارج وتحركه يمنة ويسرة فربما رجع ولم يحتج الى
غيره من العلاج ، فإن لم يرجع هكذا فينبغي أن تعدّ خادما أيّدا
قويّا فيمدّ ساقه من أسفل إمّا بيديه وإمّا بقماط يربط على ساقه فوق
الركبة وخادم آخر يمدّه من فوق بأن يدخل يديه من تحت إبطيه ثم
يشدّ بقماط لّين على أصل الفخذ ويمسك بطرف القماط خادم آخر ثالث
ويكون مده إمّا من قدام من ناحية الأريّة الى ناحية الترقوة وإمّا من
خلف الى ناحية الظهر ، ويكون مدهم كلّهم بمرّة واحدة حتى يرتفع
العليل بجسمه من الأرض ويبقى معلقا ، فإنّ هذا النوع من المدّ نوع
مشارك للأشواع الأربعة ، فإن رجع الفك بما قلنا وإلا فلا بدّ لكلّ
نوع ممّا أذكره من العلاج الخاصّ ،

أما رده الخاصّ اذا كان الفك الى داخل فينبغي أن يستلقى
العليل على جنبه الصحيح ثمّ تصير قماطا على أصل الفخذ فيما بين رأس
الفخذ والموضع الذي تحت الأريّة ثمّ تمدّ الرباط الى فوق من ناحية
الأريّة الى أعلى البدن الى ناحية الترقوة ثمّ يأخذ خادم آخر قوى أيّدا
بذراعيه ويحتضن الموضع الشخين من الفخذ العليلة ويمدّ الى خارج مدها
شديدا فإنّه يرجع الى موضعه ، وهذا النوع أسهل من سائر أنواع
العلاج الذي يكون به رده هذا العضو ،

فإن تعذّر عليك ولم يجبك الى الدخول بهذا النوع من العلاج
البتّة فينبغي أن تربط رجلى العليل جميعا برباط قوى لّين على

3. P, om. cett. 4. تردّه codd.

a strong soft bandage round his two ankles and his two knees. The distance from each to the next should be four fingers, and the injured leg should be stretched two fingers beyond the other. Then the patient is to reach upward and grasp any beam that may be in the house; he should be about two cubits from the floor. Then tell a powerful servant to clasp the head of the hip and another servant to hang from the patient; and the other servant, the one who is clasping the hip, should thrust powerfully; then the hip will speedily go back.

The special method of reduction in the case of an external dislocation: it will be necessary for the patient to be lying on a bench after the manner described for the one with a curvature of the spine; but wrappers are to be tied only on the injured leg and the chest. Then the two spars are to be set in position, one at his feet and another at his head; and have an additional spar firmly fixed in the middle of the bench and wrapped in soft cloth so as not to injure the patient; this spar is to be between his thighs so that he will not be dragged down during extension. Then each assistant is to pull in his own direction while the doctor sets the hip with his hands. And if it goes back, good. But if not, place the board upon it and put pressure upon it just as we prescribed for curvature, except that the patient will have to lie upon his sound side.

When it is an anterior dislocation, extension will have to be applied forcefully to the patient's leg, on the bench, exactly as described; the doctor should place the palm of his right hand upon the injured groin and then apply pressure with the other hand, directing the pressure so as to make extension downward toward the knee.

الكعبيين وعلى الركبتين ويكون بعد كل واحد من صاحبه قدر أربع أصابع وتكون الساق العليلة ممدودة أكثر من الأخرى قدر أصبعين، ثم يعلق العليل على الرأس من خشبة تكون في البيت ويكون بعده⁵ من الأرض قدر ذراعين ثم تأمر غلاما قويا أن يحتضن رأس الفخذ ويتعلق بالعليل 45 غلام آخر ويدفع الغلام الآخر المحتضن للفخذ بقوة فإن الفصل يرجع الى موضعه بسرعة،

وأما رده الخاص اذا كان الفك الى خارج فينبغي أن يضطجع العليل على الدكان على حسب ما وصفنا في صاحب الحدة ويشد الرباط على ساقه العليلة خاصة وعلى صدره ثم توضع الخشبستان 50 الواحدة عند رجليه والأخرى عند رأسه ثم توضع خشبة زائدة في وسط الدكان موثقة جدا قد لف عليها خرق رطبة لثلا تؤذى العليل لتكون الخشبة بين فخذه لثلا ينجذب الى أسفل عند المد، ثم يمد كل خادم الى جهته والطبيب يسوى الورك⁷ بيديه، فإن أجاب الى الرجوع ولا فضع عليه اللوح وكبسه⁸ على ما ذكرنا في الحدة سواء إلا أنه 55 ينبغي أن يكون اضطجاع العليل على جنبه الصحيح،

واذا كان الخلع الى قدام فينبغي أن تمد ساق العليل بمرة وهو على هذا الوصف بعينه على الدكان ويضع الطبيب كف يده اليمنى على الأربية العليلة ثم يضغطها باليد الأخرى ومع ذلك يصير الضغط ممدودا الى أسفل الى ناحية الركبة،

8. M. الفك. 7. cett. بعدها P, om. V, بعدا M, 6. H. من 5.

P. وكيفيته H, وحلسه وكعسه A, وتحبسه M, وكبسته

If it is a posterior dislocation the patient must not be raised above the ground and extended downward; rather must he be placed upon something hard, in the manner that we prescribed for an external displacement of the hip: he is to lie prone on the bench with the bands tied as we said before. It will also be necessary to apply pressure with the board to the site to which the joint has been displaced. When the proper reduction of the joint is completed—the signs of reduction will be plain to you; namely, that you extend both the patient's legs, and when you see that both legs are of equal length and the patient can draw up and stretch out the leg without difficulty, then you may know that the limb has gone back as it should—then bring both thighs together, apply the plaster and bind with a sash so that the hip does not move in any direction; and the patient is to keep perfectly quiet for three or four days. Then loosen the bandage and the plaster, and compare the leg with the other. If you see that they are both the same size you may know that the dislocation is cured and you can allow the patient to walk freely. But if you see any slackening then repeat: replaster and rebandage as you did at first, and leave for another three days. Then unfasten. He should be cautious about walking on it for some days, until it is thoroughly strong, God willing.

60 وإذا كان الخلع الى خلف فليس ينبغي أن يمدّ العليل الى
 أسفل وهو مرتفع على الأرض بل ينبغي أن يكون موضعا على شئ
 صلب كما ينبغي أن يكون أيضا من⁹ انفك وركه الى خارج على حسب
 ما ذكرنا من اضطجاعه على الدكان¹⁰ وهو على وجهه والرباطات مشدودة
 على ما قلنا آنفا وينبغي أن يستعمل الكبس باللح أيضا على الموضع
 65 الذي خرج المفصل اليه، فإذا كمل رجوع مفصل الورك على ما ينبغي
 علامة رجوعه لا تخفى عليك وهو أن تمدّ ساقى العليل فإذا رأيتهما
 مستويتين والعليل يقبض الساق ويبسطها من غير تعذر فاعلم أنه قد
 رجع العضو على ما ينبغي فحينئذ فاقرن الفخذين واحمل الضماد وشده
 بعمامة شدا لا تتحرك الورك الى جهة من الجهات ويلزم العليل
 70 السكون ثلاثة أيام او أربعة ثم حلّ الرباط والضماد وقس الساق
 بالأخرى، فإن رأيتهما سوا في القدر فاعلم أن الفك قد ثبت فاطلق
 العليل للمشي، وإن رأيت فيه شيئا من الاسترخاء فارجع وضمده
 وشده على حسب شدك الأول واتركه أيضا ثلاثة أيام ثم حله ويبطئ
 بالمشي عليها آياما حتى تقوى نعمًا إن شاء الله،

A. الوركان, H. الوركين. 10. cett. ان B, اذا V, الذى M. 9.

CHAPTER THIRTY-TWO. On dislocation of the knee.

The knee is dislocated in three ways; it is dislocated interiorly and exteriorly and inferiorly, that is, posteriorly. It is never dislocated anteriorly. The sign of dislocation is to bid the patient flex his leg on his thigh, and if it does not reach the thigh you may know the knee is dislocated.

The way of setting all the types of dislocation is to make the patient sit down with both legs extended, if he can, with an assistant sitting behind him to hold him by the middle and incline him slightly backward. Then do you yourself sit on his thighs with your back to his front, and put his leg between yours; then the palms of your hands should be applied to his knee, and join them together by twining the fingers; then with the palms put strong pressure on both sides of his knee while another assistant extends his foot until the knee goes back to its place. The sign of its return is that the leg can be flexed back easily and without hindrance upon the thigh. Then apply a plaster and flex the leg on to the thigh and bandage them together for three or four days; then loosen them. He should do little walking for some days until it gains strength.

But if you cannot effect reduction by this method, apply powerful extension by bandages as we have described above for the treatment of the hip, until it goes back.

الفصل الثاني والثلاثون في علاج فك الركبة

الركبة تنفك على ثلاثة أوجه تنفك الى داخل وإلى خارج وإلى أسفل أعني الى خلف ولا تنفك الى قدام البتة، وعلامة فكها أن تامر الحليل أن يضم ساقه الى فخذه فإن لم يلبق بالفخذ فاعلم أن الركبة منفكة،⁵

وجبر جميع رجوه فكها أن تجلس الحليل قاعدا وقد مدّ ساقه إن قوى على ذلك وتجلس خاد ما خلفه ليمسك وسطه ويلويه الى خلف قليلا ثم تجلس أنت على فخذه وتلمق ظهرك الى وجهه وتعمل رجله بين رجلك ثم تلزم ركبه بكفك وتشبكهما بين أصابعك على ركبه ثم تضم بكفك جانبي ركبه بقوة وخادم آخر يمدّ رجله حتى ترجع الركبة الى موضعها، وعلامة رجوعها أن تلمق الساق بالفخذ في لين غير مكروه، ثم ضدها وألصق الساق بالفخذ ثم اربطهما جميعا بمصاوبة ثلاثة أيام أو أربعة ثم اطلقهما، ولا يستعمل² إلا المشى القليل¹ أياما حتى تقوى،

فإن تمدّر عليك رجوعها بما وصفنا ولا فاستعمل المدد السقوي بالرباطات التي تقدّم وصفى لها في علاج الورك حتى ترجع،

cett. المشى الحليل A، المشى الا القليل HP، 2. BHV. رجليه 1.

CHAPTER THIRTY-THREE. On the treatment of dislocation of the ankle.

The ankle is sometimes slightly displaced, sometimes fully dislocated, the dislocation being either internal or external. The sign of its dislocation is that you will see the ankle swollen, and projecting on the side to which it is dislocated. As to the treatment of its displacement, the reduction of it is easy: if it is gently extended with the hands and straightened, it will go back.

As to treatment when it is dislocated completely, you should make the patient sit upright with a strong and sturdy assistant holding him about the middle from behind. Then hold the dorsum of the foot with your right hand, and with the left grasp the foot from below about the heel. Then draw the foot toward you with your right hand, then with the left, twice. Then extend it with the left hand and thrust the metatarsus with the right hand without violence toward the leg. Do this as we have described, twice. Then thrust the metatarsus toward the leg a third time while exerting traction at the heel. If it goes back in one or two attempts thus, and you see the foot is straightened, well and good. If not, repeat the operation and it will go back.

If you find it impossible to reduce it by what we have said, make the patient lie on his back on the ground and firmly fix in the ground between his thighs a stake wrapped in material so as not to hurt him. Then an assistant should grasp his thigh and another assistant should extend the foot, either manually or with a cord tied round the narrow part of it; the assistants should pull one against another, with the stake upright between the

الفصل الثالث والثلاثون فى علاج فكّ الكعب

الكعب قد يزول زوالا يسيرا وقد ينفك على الكمال وفكّه يكون إمّا الى داخل وإمّا الى خارج وعلامة فكّه أن ترى الكعب منتفخا بارزا الى الجهة التى انفكّ اليها ، فأما علاج زواله فيسهل رده وهو أن يمدّ 5 برفق بالأيدى ويسوى حتّى يرجع،

وأما علاجه اذا انفكّ على الكمال فينبغى أن تجلس العليل قاعدا ويمسكه خادم قوى آيد من خلف ظهره فى وسطه ثمّ تمسك أنت بيدك اليمنى قدمه من أعلاها وبيدك اليسرى من أسفل قدمه فى موضع العرقوب، ثمّ جرّ القدم اليك بيدك اليمنى ثمّ باليسرى "مرتين" 10 ثمّ مدها باليسرى" وادفع صدر القدم باليمنى نحو الساق من غير عنف تصنع ذلك مرتين كما وصفنا ثمّ ادفع صدر القدم الى الساق فى المرّة الثالثة² وأنت تجرّ بالعرقوب، فإن رجعت فى مرّة او مرتين على هذه الصفة ورأيت القدم مستوية وإلا فأعد العمل عليها فإنّها ترجع،

فإن امتنع لك رجوعها بما وصفنا وإلا فأضجع العليل على ظهره 15 على الأرض وأغرز وتدا فى الأرض موثقا جدّا ليقع بين فخذه وقد لففت عليه خرقا لثلا يؤذى العليل، ثمّ يضبط خادم فخذه ثمّ يمدّ خادم آخر الرجل إمّا ببيديه وإمّا برباط يربطه على عنق الرجل، ثمّ يمدّ كلّ خادم خلاف مّد صاحبه والوتد قائم بين فخذى العليل يمسكه لثلا

ثم أسفل فى A، من أسفل فى موضع الكعب ثم جرّ القدم مرتين 1. الثانية. 2. M, om. P. موضع الكعب ثم جرّ القدم اليك ثم مد اليسرى

patient's thighs holding him so that his body will not be dragged down with the extension. Then the doctor should straighten out the dislocation with both hands, while another assistant holds down the sound leg; then the dislocation will speedily go back.

Then when the dislocation is reduced and the soundness of the reduction is manifested to you, apply a plaster and packing, bandage firmly and bind the foot downwards.¹ You will have to be careful of the tendon above the ankle at the back, not to bandage tightly over it so as to injure it. Then leave him for two or three days; and if the binding works loose, tighten it up. Then on the third or fourth day loosen it, but the patient is to abstain from walking for forty days, for if he tries to walk before this lapse of time you cannot be sure that the dislocation will not collapse and corruption set in and thereafter be incurable. If an abscess occur you must allay it by the application of such dressings and embrocations as we have already described more than once, until it is gone.

¹ So AHPS. The other three MSS. read 'to the leg'.

ينجذب جسمه الى أسفل عند المدّ، ثمّ يسوّى الطبيب الفكّ بيديه
20 وخادم آخر يمسك الساق الصحيحة الى أسفل فإنّ الفكّ يرجع
بسرعة،

فإذا رجع الفكّ وتبيّن لك صحّة رجوعه فاحمل الضماد والمشاقة
وشدّه برباطات وثيقة واعقل القدم بالرباط الى أسفل، وينبغي أن
تتقى من العصب الذى يكون فوق الكعب من خلف لثلا يكون الرباط
25 عليه شديدا فيؤذيه، ثمّ تتركه يومين او ثلاثة فإن استرخى الرباط
فشدّه ثمّ أطلقه فى اليوم الثالث او الرابع، ويمتنع العليل من المشى
أربعين يوما فإن رام المشى قبل هذه المدّة لم تأمن أن يتنقض عليه
الفكّ ويفسد ولا يقبل بعد ذلك العلاج، فإن عرض له ورم حارّ
فينبغي أن تستعمل فى تسكينه ما تقدّم وصفنا فى غير موضع من
30 العلاج والتنطيل حتى يذهب،

HS. ويفسده، P, om. A, فيستغسل عليه ويفسد. 4. BMV. الساق 3.

CHAPTER THIRTY-FOUR. On the treatment of dislocation of the toes.

Any that are dislocated must be straightened by means of gentle extension, without violence; that is not hard but positively easy. If the dislocation be in one of the joints of the dorsum of the foot, the patient must set his foot on level ground or upon a board, standing as though walking. Then you must stand and put your foot on what protrudes of those joints, and put strong pressure upon it with your foot until it goes back and you see that it is evened out and there is no prominence at the place. Then put under the sole of his foot a flat splint with two heads to take the whole foot, and bind it on with a tight and secure bandage for three days; then loosen it; but keep him from walking for a good many days until it binds and you are sure it will not revert, God willing.

الفصل الرابع والثلاثون في علاج فك أصابع الرجل

ينبغي أن تسوى ما انفك منها بمد يسير من غير عنف وذلك
ليس بعسر بل يسهل ، فإن كان الفك في بعض فصوص ظهر
القدم فينبغي أن يجعل¹ العليل قدمه² على موضع مستو من الأرض أو
5 على لوح وهو واقف كالماشي ، ثم قم³ أنت وضع قدمك على ما نتا من
تلك المفاصل ثم طأها بقدمك بقوة حتى ترجع وتراها قد استوت ولم
يظهر في الموضع نتو ثم اجعل تحت باطن قدمه لوحا يأخذ القدم
كله يكون له رأسان ثم تشده شدا محكما وثيقا ثلاثة أيام ثم تحله
وتصونه عن المشي أياما كثيرة حتى يشتد وتأمين العودة إن شاء الله ،

1. HS, يجلس cett. 2. om. AM. 3. قف AM.

CHAPTER THIRTY-FIVE. On the kinds of dislocation that accompany a wound or a fracture or both.

When anything of this kind happens and you attempt treatment and restoration, death is a frequent sequel. Therefore such treatment should be undertaken only by a person that is skilled in the art, has long experience, is dexterous, sympathetic, cautious, and not reckless or over-bold. To begin with he should apply only remedies for the allaying of abscesses and then leave the patient to Divine providence, unless, of course, the injury is light enough to give some hope of his escaping death; in which case you should set out to reduce it at once before an abscess arise. If the part goes back as you wish, employ the treatment for allaying abscesses and dress the wound with suitable desiccant ointments. If it be a dislocation with a fracture and there occur splintered fragments in the bone, try to remove them, following therein the instructions relating to the simple diseases we have mentioned before in their place. Use your utmost diligence; keep clear of entering upon a course with a dangerous outcome, as I have enjoined on you before. For this will best ensure the continuance of your prestige and safeguard your good name, God willing.

الفصل الخامس والثلاثون فى أنواع الفك الذى يكون مع جرح او مع كسر او معهما جميعا

متى حدث شئ من ذلك ورمت علاجه وجبره فكثيرا ما يعقب بالموت ولذلك لا ينبغي أن يقدم على علاج مثل ذلك إلا من كان 5 حاذقا بالصناعة طويل الدربة رقيقا شفيقا متأنيا غير متهور ولا جسور وأن يستعمل فى الابتداء الأدوية التى تسكن الأورام الحارة فقط ويسلم العليل للقدر اللهم إلا ما رجوت له السلامة من العطب مع خفة المرض وظهر لك فيه بعض الرجاء فرم رده من ساعتك فى أول الأمر قبل أن يحدث الورم الحار، فإن رجع العضو على ما أردت 10 فاستعمل التدبير الذى يسكن الأورام الحارة وعالج الجرح بما يصلح له من المراهم المجففة، فإن كان الفك مع كسر وحدث فى العظم شظايا متبرئة فرم انتزاعها وامثل فى ذلك ما ذكرنا فى الأمراض البسيطة مما تقدم فى مواضعها، وتحرى جهدك ونزه نفسك من الدخول فى طريق الغرر على ما تقدمت وصيتى لك فذلك أبقى 15 لجاهك وأسلم لعرضك إن شاء الله،

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